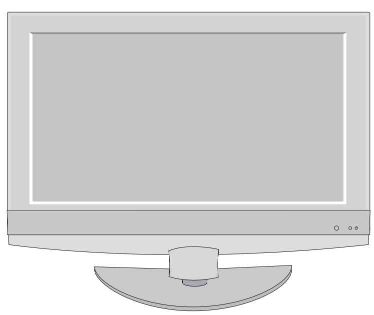
LG

LCD TV
SERVICE MANUAL

CHASSIS : LD84D

MODEL : 42LG5010 42LG5010-ZD
42LG5020 42LG5020-ZB
42LG5030 42LG5030-ZE

CAUTION
BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



CONTENTS

SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and Replacement Parts List.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Before returning the receiver to the customer,

always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

Leakage Current Cold Check(Antenna Cold Check)

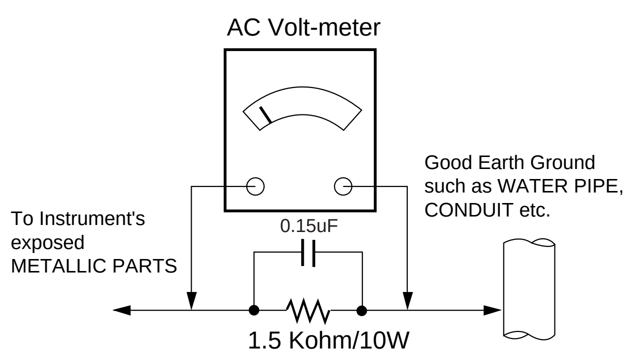
With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1MΩ and 5.2MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)

Plug the AC cord directly into the AC outlet.

Do not use a line Isolation Transformer during this check.
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5mA.
In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



SERVICING PRECAUTIONS

CAUTION: Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the *SAFETY PRECAUTIONS* on page 3 of this publication.
NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
   a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
   b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
   c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.
   CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe.
   Do not test high voltage by "drawing an arc".
3. Do not spray chemicals on or near this receiver or any of its assemblies.
4. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength)
   CAUTION: This is a flammable mixture.
   Unless specified otherwise in this service manual, lubrication of contacts in not required.
5. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
6. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
7. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.
   Always remove the test receiver ground lead last.
8. *Use with this receiver only the test fixtures specified in this service manual.*
   CAUTION: Do not connect the test fixture ground strap to any heat sink in this receiver.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid-state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices.* Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range or 500。F to 600。F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a mall wire-bristle (0.5 inch, or 1.25cm) brush with a metal handle.
   Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach normal temperature. (500。F to 600。F)
   b. Heat the component lead until the solder melts.
   c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
   CAUTION: Work quickly to avoid overheating the circuitboard printed foil.
6. Use the following soldering technique.
   a. Allow the soldering iron tip to reach a normal temperature (500。F to 600。F)
   b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.
   c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
   CAUTION: Work quickly to avoid overheating the circuit board printed foil.
   d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

Power Output, Transistor Device Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heat sink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heat sink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicular y to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

Fuse and Conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.
   CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side.
   Carefully crimp and solder the connections.
   CAUTION: Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.

SPECIFICATION

NOTE : Specifications and others are subject to change without notice for improvement.

1. Application Range.

This spec sheet is applied to the 37"/42"/47"/52" LCD TV used LA84A chassis.

2. Specification

Each part is tested as below without special appointment

2.1 Temperature : 25±5°C(77±9°F), CST : 40±5°C
2.2 Relative Humidity : 65±10%
2.3 Power Voltage : Standard input voltage
(100~240V@ 50/60Hz)
• Standard Voltage of each products is marked by models
2.4 Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM .
2.5 The receiver must be operated for about 5 minutes prior to the adjustment.

3. Test method

3.1 Performance : LGE TV test method followed.
3.2 Demanded other specification
Safety : CE, IEC specification
EMC : CE, IEC

4. General Specification

No	Item	Specification		Remark
1	Display Screen Device	37/42/47/52" wide Color Display Module		LCD
2	Aspect Ratio	16:9		
3	LCD Module	37" TFT LCD FHD		MAKER : 37"- LPL
		42" TFT LCD FHD		42"- AUO
		47" TFT LCD FHD		47"- CMO
		52" TFT LCD FHD		52"- SHARP
4	Operating Environment	Temp. : 0 ~ 40 deg		
		Humidity : 0 ~ 85%		LGE SPEC
5	Storage Environment	Temp. : -20 ~ 60 deg		
		Humidity : 0 ~ 85 %		
6	Input Voltage	AC100 ~ 240V, 50/60Hz		
7	Power Consumption	Power on (Green)		
		37"	≤ 132W (7.86 + 125 W)	LG5000
		42"	≤ 197W (13.2 + 184 W)	LCD + Backlight
		47"	≤ 242W (26.4 + 216.1 W)	
		52"	≤ 335W (20.16 + 315 W)	
8	Type Size	37"	877(H) x 516.8(V) x 55.5(D)	LG5000
		42"	983.0(H) x 576.0(V) x 52.7(D)	With inverter
		47"	1096.0(H) x 640.0(V) x 51.0(D)	
		52"	1219.0(H) x 706.7(V) x 64.6(D)	
9	Pixel Pitch	37"	0.42675(H) x 0.42675(V)	LG5000
		42"	0.4845	
		47"	0.5415 (H) x 0.1805(V)	
		52"	0.600(H) x 0.600(V)	
10	Back Light	37"	TBD(EEFL), Straight type	LG5000
		42"	18pcs, Straight type	
		47"	20CCFL, Straight type	
		52"	24CCFTs, direct type	
11	Display Colors	16.7M (16,777,216)		
12	Coating	3H, AG		

5. MODEL General Specification

No	Item	Specification	Remarks
1	Broadcasting system	1) PAL-BG 2) PAL-DK 3) PAL-I/I' 4) SECAM L/L' 5) DVB-T (ID TV)	
2	Receiving system	Analog : Upper Heterodyne Digital : COFDM	
3	Scart Jack (2EA)	PAL, SECAM	Scart 1 Jack is Full scart and support RF-OUT(analog) Scart 2 jack is Half scart and support MNT/DTV-OUT.
4	Video Input RCA(1EA)	PAL, SECAM, NTSC	4 System : PAL, SECAM, NTSC, PAL60
5	S-Video Input (1EA)	PAL, SECAM, NTSC	4 System : PAL, SECAM, NTSC, PAL60
6	Component Input (1EA)	Y/Cb/Cr Y/Pb/Pr	
7	RGB Input	RGB-PC	Analog(D-SUB 15PIN)
8	HDMI Input (3EA)	HDMI1-DTV/DVI HDMI2-DTV HDMI3-DTV	PC(HDMI version 1.3) Support HDCP
9	Audio Input (3EA)	RGB/DVI Audio Component AV	L/R Input
10	SDPIF out (1EA)	SPDIF out	
11	Earphone out (1EA)	Antenna, AV1, AV2, AV3, Component, RGB, HDMI1, HDMI2, HDMI3	
12	USB (1EA)		For service only

6. Chroma & Brightness

6.1 37"LCD Module

No.	Item	Specification		Min.	Typ.	Max.	Remark
1.	Viewing Angle<CR>10>	Right/Left/Up/Down		89			
2.	Luminance	Luminance (cd/m2)		400	500		
		Variation			-	1.3	MAX / MIN
3.	Contrast Ratio	CR		1000	1400		
4.	CIE Color Coordinates	White	WX	Typ	0.279	Typ	LPL(37")
			WY	-0.03	0.292	+0.03	
		RED	Xr		0.641		
			Yr		0.334		
		Green	Xg		0.291		
			Yg		0.614		
		Blue	Xb		0.145		
			Yb		0.062		

1) Standard Test Condition (The unit has been 'ON')
2) Stable for approximately 30 minutes in a dark environment at 25±2_
3) The values specified are at approximate distance 50Cm from the LCD surface
4) Ta= 25±2°C, VLCD=12.0V, fV=60Hz, Dclk=148.5MHz VBR_A=1.6V, ExtVBR_B=100%

6.2 42"LCD Module

No.	Item	Specification		Min.	Typ.	Max.	Remark
1.	Viewing Angle<CR>10>	Right/Left/Up/Down			89		
2.	Luminance	Luminance (cd/m2)		400	500		
		Variation			-	1.3	MAX / MIN
3.	Contrast Ratio	CR		1000	1500		
4.	CIE Color Coordinates	White	WX	Typ	0.280	Typ	AUO(42")
			WY	-0.03	0.290	+0.03	
		RED	Xr		0.640		
			Yr		0.330		
		Green	Xg		0.290		
			Yg		0.600		
		Blue	Xb		0.150		
			Yb		0.060		

1) Standard Test Condition(The unit has been 'ON')
2) Stable for approximately 60 minutes in a dark environment at 25_
3) The values specified are at approximate distance 50Cm from the LCD surface

6.3 47"LCD Module

No.	Item	Specification		Min.	Typ.	Max.	Remark
1.	Viewing Angle<CR>10>	Right/Left/Up/Down		80	88		
2.	Luminance	Luminance (cd/m2)		450	500		
		Variation			-	1.3	MAX / MIN
3.	Contrast Ratio	CR		1800	2000		
4.	CIE Color Coordinates	White	WX	Typ	0.280	Typ	CMO(47")
			WY	-0.03	0.285	+0.03	
		RED	Xr		0.638		
			Yr		0.331		
		Green	Xg		0.272		
			Yg		0.590		
		Blue	Xb		0.144		
			Yb		0.068		

1) Stable for approximately 60 minutes in a dark environment at 25±2_ and windless room
2) Ambient Humidity: 50±1%RH
3) Supply Voltage: 12V
4) Lamp Current: 5.2±0.5mA
5) Oscillating Frequency: 66±3KHz
6) Frame rate: 60Hz

6.4 52"LCD Module

No.	Item	Specification		Min.	Typ.	Max.	Remark
1.	Viewing Angle<CR>10>	Right/Left/Up/Down		70	88		
2.	Luminance	Luminance (cd/m2)		360	450		
		Variation			-	1.25	MAX / MIN
3.	Contrast Ratio	CR		1000	1500		
4.	CIE Color Coordinates	White	WX	Typ	0.272	Typ	SHARP(52")
			WY	-0.03	0.277	+0.03	
		RED	Xr		0.640		
			Yr		0.330		
		Green	Xg		0.280		
			Yg		0.600		
		Blue	Xb		0.150		
			Yb		0.060		

1) Standard Test Condition (The unit has been ‘ON’)
2) Stable for approximately 30 minutes in a dark environment at 25±2_
3) The values specified are at approximate distance 40Cm from the LCD surface
4) Ta=25°C, Vcc=12.0V, VINV =24.0V, VBRT=3.3V, Timing: 60Hz (typ. value)
5) Measurement condition: Set the value of VBRT to maximum luminance of white.

7. SET Optical Feature

(Measurement Condition: Full white/ Dynamic) -> Measure the black luminance after 30 seconds.

No	Item	module	Luminance (min)	C/R(min)	Remark
			AV, COMPONENT, HDMI	AV, COMPONENT, HDMI	
1	37 inch	LPL	400cd/m^2	1000	LG5000
3	42 inch	AUO	400cd/m^2	1000	C/R is excepted for PC mode.
3	47 inch	CMO	400cd/m^2	1000	
4	52 inch	SHARP	360cd/m^2	1000	

8. Component Video Input (Y, P_B, P_R)

No.	Specification			Remark
	Resolution	H-freq(kHz)	V-freq(Hz)	
1.	720x480	15.73	60.00	SDTV, DVD 480i
2.	720x480	15.63	59.94	SDTV, DVD 480i
3.	720x480	31.47	59.94	SDTV, 480p
4.	720x480	31.50	60.00	SDTV, 480p
5.	720x576	15.625	50.00	SDTV, DVD 625 Line
6.	720x576	31.25	50.00	HDTV 576p
7.	1280x720	45.00	60.00	HDTV 720p
8.	1280x720	44.96	59.94	HDTV 720p
9.	1280x720	37.50	50	HDTV 720p 50Hz
10.	1920x1080	31.25	50.00	HDTV 1080i
11.	1920x1080	33.75	60.00	HDTV 1080i
12.	1920x1080	33.72	59.94	HDTV 1080i
13.	1920x1080	56.25	50.00	HDTV 1080P
14.	1920x1080	67.433	59.94	HDTV 1080P
15.	1920x1080	67.50	60	HDTV 1080P

9. RGB PC

No	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remarks
1.	720*400	31.468	70.08	28.321		
2.	640*480	31.469	59.94	25.17	VESA	Input 848x480 60Hz, 852x480 60Hz
		37.684	75.00	31.50		=> 640x480 60Hz Display
3	800*600	37.879	60.31	40.00	VESA	
		46.875	75.00	49.50		
4.	832*624	49.725	74.55	57.283	Macintosh	
5	1024*768	48.363	60.00	65.00	VESA(XGA)	
		56.470	70.00	75.00		
		60.123	75.029	78.75		
6	1280*768	47.78	59.87	79.5	WXGA	
7	1360*768	47.72	59.8	84.75	WXGA	
8	1366*768	47.56	59.6	84.75	WXGA	
9	1280*1024	63.595	60.0	108.875	SXGA	FHD Model only
10	1920*1080	66.647	59.988	138.625	WUXGA	FHD Model only

10. HDMI Input (DTV)

No.	Resolution	H-freq(kHz)	V-freq(Hz)	Pixel clock(MHz)	Proposed	Remark
1.	720*480	31.47	59.94	27.00	SDTV 480P(4:3)	
2.	720*480	31.50	60	27.027	SDTV 480P(4:3)	
3.	640*480	31.469	59.94	25.175	SDTV 480P(4:3)	
4.	640*480	31.469	60.00	25.20	SDTV 480P(4:3)	
5.	720*480	31.47	59.94	27.000	SDTV 480P(16:9)	
6.	720*480	31.50	60.00	27.027	SDTV 480P(16:9)	
7.	720*576	31.25	50.00	27.000	SDTV 576P	
8.	1280*720	37.50	50.00	74.176	HDTV 720P	HDCP
9.	1280*720	44.96	59.94	74.176	HDTV 720P	HDCP
10.	1280*720	45.00	60.00	74.250	HDTV 720P	HDCP
11	1920*1080	33.72	59.94	74.176	HDTV 1080I	HDCP
12	1920*1080	33.75	60.00	74.250	HDTV 1080I	HDCP
13	1920*1080	28.125	50.00	74.250	HDTV 1080I 50Hz	HDCP
14	1920*1080	27.000	24.00	74.250	HDTV 1080P 24Hz	HDCP
15	1920*1080	56.250	50	148.500	HDTV 1080P 50Hz	HDCP
16	1920*1080	67.433	59.94	148.352	HDTV 1080P	HDCP
17	1920*1080	67.500	60	148.500	HDTV 1080P	HDCP

11. HDMI Input (PC)

No	Resolution	H-freq(kHz)	V-freq.(Hz)	Pixel clock(MHz)	Proposed	Remarks
1.	720*400	31.468	70.08	28.321		HDCP
2.	640*480	31.469	59.94	25.17	VESA	HDCP
		37.684	75.00	31.50		
3	800*600	37.879	60.31	40.00	VESA	HDCP
		46.875	75.00	49.50		
4.	832*624	49.725	74.55	57.283	Macintosh	HDCP
5	1024*768	48.363	60.00	65.00	VESA(XGA)	HDCP
		56.470	70.00	75.00		
		60.123	75.029	78.75		
6	1280*768	47.78	59.87	79.5	WXGA	HDCP
7	1360*768	47.72	59.8	84.75	WXGA	HDCP
8	1366*768	47.56	59.6	84.75	WXGA	HDCP
9	1280*1024	63.595	60.0	108.875	SXGA	FHD Model only, HDCP
10	1920*1080	66.647	59.988	138.625	WUXGA	FHD Model only, HDCP

12. Mechanical specification

12-1. 37LG5000

No.	Item		Content			Unit	Remark
1.	Product Dimension		Widt(W)	Length(D)	Height(H)	mm	
		Before Packing	936.4	293.8	684.4	mm	With Stant
		After Packing	1195	253	665	mm	
2.	Product	Only SET	18.3			Kg	
		With BOX	23			Kg	

12-2. 42LG5000

No.	Item		Content			Unit	Remark
1.	Product Dimension		Widt(W)	Length(D)	Height(H)	mm	
		Before Packing	1034	293.4	735	mm	With Stant
		After Packing	1330	257	772	mm	
2.	Product	Only SET	23.5			Kg	
		With BOX	26.2			Kg	

12-3. 47LG50

No.	Item		Content			Unit	Remark
1.	Product Dimension		Widt(W)	Length(D)	Height(H)	mm	
		Before Packing	1156.2	342.9	813.1	mm	With Stant
		After Packing	1266	460	887	mm	
2.	Product	Only SET	29.5			Kg	
		With BOX	35.4			Kg	

12-4. 52LG5000

No.	Item		Content			Unit	Remark
1.	Product Dimension		Widt(W)	Length(D)	Height(H)	mm	
		Before Packing	1291.7	342.9	892.2	mm	With Stant
		After Packing	1386	411	976	mm	
2.	Product	Only SET	39.5			Kg	
		With BOX	46.2			Kg	

ADJUSTMENT INSTRUCTION

1. Application Range

These instructions are applied to all of the LCD TV, LD84D Chassis.

2. Notice

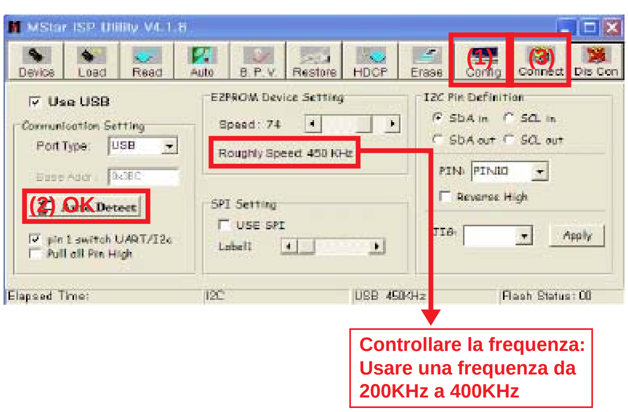
2.1 The adjustment is according to the order which is designated and which must be followed, according to the plan which can be changed only on agreeing.
2.2. Power Adjustment: Free Voltage
2.3. Magnetic Field Condition: Nil.
2.4. Input signal Unit: Product Specification Standard
2.5. Reserve after operation: Above 5 Minutes (Heat Run)
Temperature : at 25°C±5°C
Relative humidity : 65 ±10%
Input voltage : 220V, 60Hz
2.6. Adjustment equipments: Color Analyzer (CA-210 or CA-110), Pattern Generator (MSPG-925L or Equivalent), DDC Adjustment Jig equipment, SVC remote controller
2.7. Don't push The "IN STOP KEY" after completing the function inspection.

3. Main PCB check process

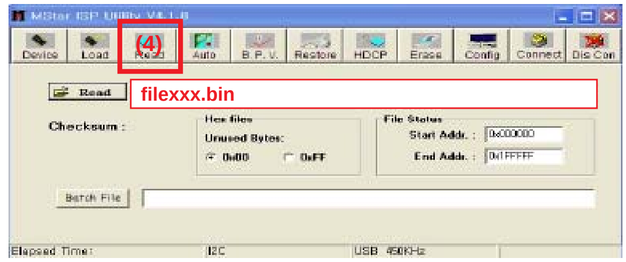
○ APC - After Manual-Insult, executing APC

○ Download

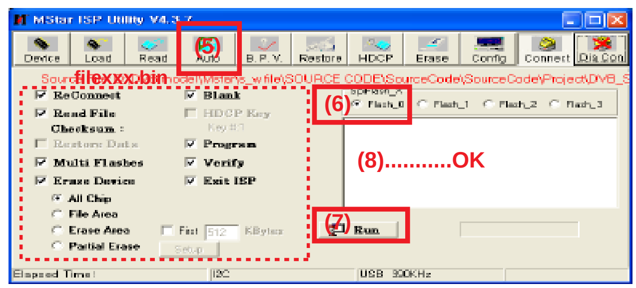
1. Execute ISP program "Mstar ISP Utility" and then click "Config" tab.
2. Set as below, and then click "Auto Detect" and check "OK" message.
   If display "Error", Check connect computer, jig, and set.
3. Click "Connect" tab.
   If display "Can't ", Check connect computer, jig, and set.



4. Click "Read" tab, and then load download file(XXXX.bin) by clicking "Read"



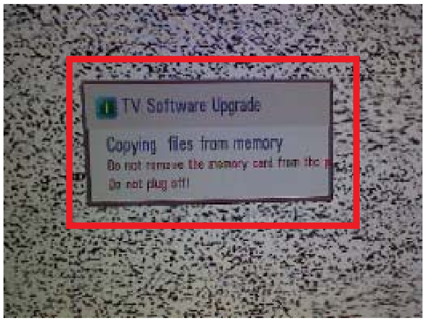
5. Click "Auto" tab and set as below
6. Click "Run".
7. After downloading, check "OK" message.



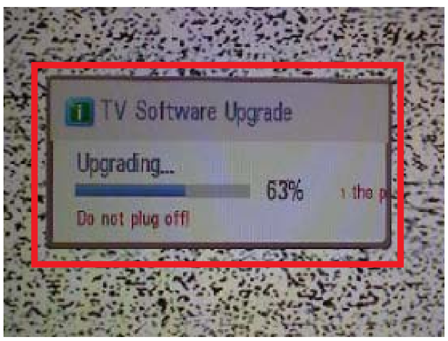
LGE Internal Use Only

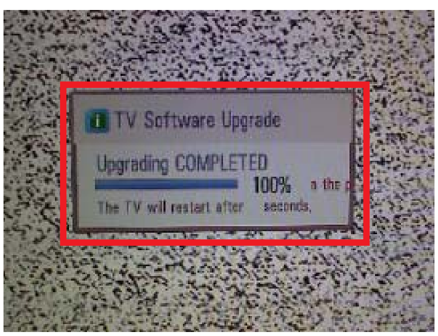
○ USB DOWNLOAD

1. Put the USB Stick to the USB socket
2. Automatically detecting update file in USB Stick
   - If your downloaded program version in USB Stick is Low, it didn't work. But your downloaded version is High, USB data is automatically detecting
3. Show the message "Copying files from memory"



4. Updating is staring.





5. Updating Completed, The TV will restart automatically.
6. If your TV is turned on, check your updated version and Tool option. (explain the Tool option, next stage)

* If downloading version is more high than your TV have, TV can lost all channel data. In this case, you have to channel recover. if all channel data is cleared, you didn't have a DTV/ATV test on production line.

○ After downloading, have to adjust TOOL OPTION again.

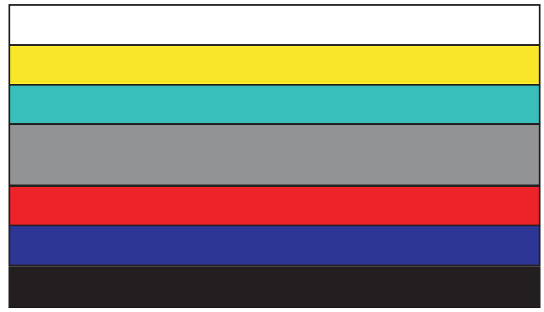
1. Push "IN-START" key in service remote controller
2. Select "Tool Option 1" and Push "OK" button
3. Punch in the number. (Each model has their number.)
4. Completed selecting Tool option

3.1 ADC Process

3.1.1 PC input ADC

3.1.1.1 Auto RGB Gain/Offset Adjustment

- Convert to PC in Input-source
- Signal equipment displays
  Output Voltage: 700 mVp-p
  Impress Resolution XGA (1024 x 768 @ 60Hz)
  Model : 60 in Pattern Generator
  Pattern : 65 in Pattern Generator (MSPG-925 SERISE)



Adjustment pattern (PC)

- Adjust by commanding AUTO_COLOR_ADJUST.

3.1.1.2 Confirmation

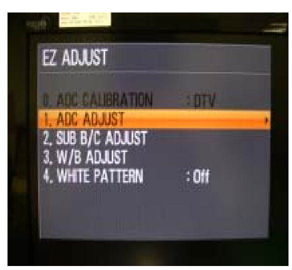
- We confirm whether "0xAA (RGB)" address of EEPROM "0xA2" is "0xAA" or not.
- If "0xAA (RGB)" address of EEPROM "0xA2" isn't "0xAA", we adjust once more
- We can confirm the ADC values from "0xA4~0XA9 (RGB)" addresses in a page "0xA2"

*Manual ADC process using Service Remocon. After enter Service Mode by pushing "ADJ" key, execute "ADC Adjust" by pushing "▶ " key at "ADC CALIBRATION: RGB-PC".

3.2.1 COMPONENT input ADC

3.2.1.1 Component Gain/Offset Adjustment

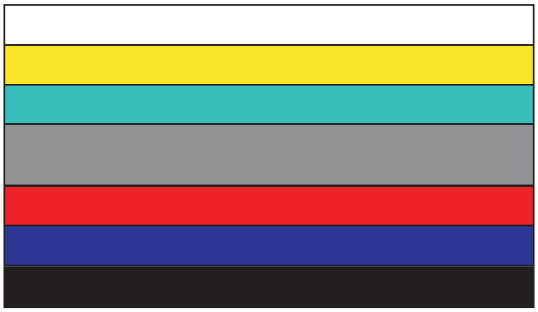
- Convert to Component in Input-source
- Signal equipment displays
  Impress Resolution 480i





MODEL: 209   in Pattern Generator(480i Mode)
PATTERN : 65 in Pattern Generator(MSPG-925 SERISE)

Impress Resolution 1080i
MODEL: 223   in Pattern Generator(1080i Mode)
PATTERN: 65 in Pattern Generator(MSPG-925 SERISE)



Adjustment pattern (COMPONENT)

- Adjust by commanding AUTO_COLOR_ADJUST.

3.2.1.2 Confirmation
- We confirm whether "0xB3 (480i)/0xBC (1080i)" address of EEPROM "0xA2" is "0xAA" or not.
- If "0xB3 (480i)/0xBC(1080i)" address of EEPROM "0xA2" isn't "0xAA", we adjust once more
- We can confirm the ADC values from "0xAD~0xB2 (480i)/0XB6~BB (1080i)" addresses in a page "0xA2"

*Manual ADC process using Service Remocon. After enter Service Mode by pushing "ADJ" key,
execute "ADC Adjust" by pushing "▶" key at "ADC CALIBRATION :COMPONENT".

Impress Resolution 480i



Impress Resolution 1080i



3.2 Function Check

3.2.1 Check display and sound
-Check Input and Signal items. (cf. work instructions)
1. TV
2. AV (SCART1/SCART2/S-VHS/CVBS)
3. COMPONENT (480i)
4. RGB (PC : 1024 x 768 @ 60hz)
5. HDMI
6. PC Audio In

* Display and Sound check is executed by Remote controller.

4. Total Assembly line process

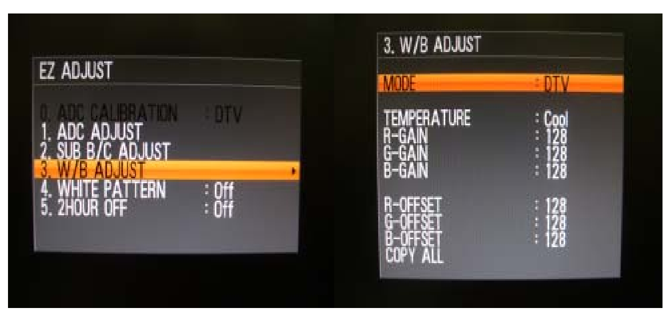
4.1 Adjustment Preparation
- W/B Equipment condition
  CA210: CH 9, Test signal: Inner pattern (85IRE)
- Above 5 minutes H/run in the inner pattern. ("power on" key of adjust remote control)
- 15 Pin D-Sub Jack is connected to the AUTO W/B EQUIPMENT.
- Adjust Process will start by execute I2C Command (Inner pattern (0xF3, 0xFF).

Color Temperature	Cool	11,000k	°K	X=0.276 (±0.002)	LG5000	<Test Signal>
				Y=0.283 (±0.002)		Inner pattern
	Medium	9,300k	°K	X=0.285 (±0.002)		(216gray,85IRE)
				Y=0.293 (±0.002)		
	Warm	6,500k	°K	X=0.313 (±0.002)		
				Y=0.329 (±0.002)		

- Adjust Process will finish by execute I2C Command (Inner pattern (Inner pattern (0xF3,0x00)).

** Caution **
Color Temperature: COOL, Medium, Warm
One of R Gain/G Gain/ B Gain should be kept on 0xC0, and adjust other two lower than C0.
(when R/G/B Gain are all C0, it is the FULL Dynamic Range of Module)

*Manual W/B process using adjusts Remote control.
- After enter Service Mode by pushing "ADJ" key,
- Enter White Pattern off of service mode, and change off -> on.
- Enter "W/B ADJUST" by pushing "▶" key at "3. W/B ADJUST".



- After done all adjustments, Press "In-start" button and compare Tool option and Area option value with its BOM, if it is correctly same then unplug the AC cable. If it is not same, then correct it same with BOM and unplug AC cable. For correct it to the model's module from factory JIG model.

- Don't push The "IN STOP KEY" after completing the function inspection.

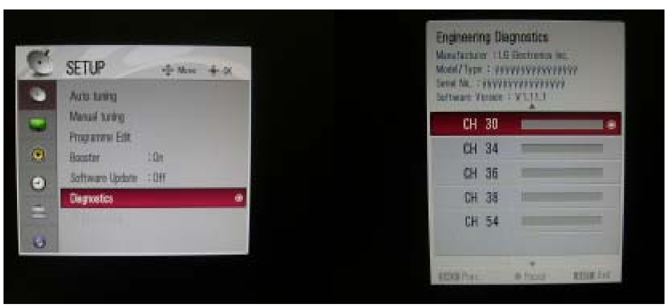
4.2 DPM operation confirmation (Only Apply for MNT Model)

• Check if Power LED Color and Power Consumption operate as standard.
  - Set Input to RGB and connect D-sub cable to set
  - Measurement Condition: (100~240V@ 50/60Hz)
  - Confirm DPM operation at the state of screen without Signal

4.3 DDC EDID Write (RGB 128Byte)
  - Connect D-sub Signal Cable to D-Sub Jack.
  - Write EDID DATA to EEPROM (24C02) by using DDC2B protocol.
  - Check whether written EDID data is correct or not.

4.4. DDC EDID Write (HDMI 256Byte)
  - Connect HDMI Signal Cable to HDMI Jack.
  - Write EDID DATA to EEPROM(24C02) by using DDC2B protocol.
  - Check whether written EDID data is correct or not

4.5. Serial number (RS-232C)
  - Press "Power on" key of service remocon.(Baud rate : 115200 bps)
  - Connect RS232 Signal Cable to RS-232 Jack.
  - Write Serial number by use RS-232.
  - Must check the serial number at the Diagnostics of SET UP menu. (Refer to below).



4.5 EDID DATA

Note) Because downloading can be down at the power on mode only, if it is not set, press the Power ON key of the remote controller to proceed.

○ HDMI1 EDID (DDC (Display Data Channel) Data

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	00	11	01	03	80	73	41	96	0A	CF	74	A3	57	4C	B0	23
20	09	48	4C	AF	CF	00	31	40	45	40	61	40	81	80	A9	40
30	01	01	01	01	01	01	66	21	50	B0	51	00	1B	30	40	70
40	36	00	C4	8E	21	00	00	1E	02	3A	80	18	71	38	2D	40
50	58	2C	45	00	C4	8E	21	00	00	1E	00	00	00	FD	00	30
60	58	1F	64	11	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	8A

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	18	F1	47	84	05	03	02	20	22	10	23	15	07	50
10	67	03	0C	00	10	00	B8	2D	01	1D	00	72	51	D0	1E	20
20	6E	28	55	00	C4	8E	21	00	00	1E	01	1D	80	18	71	1C
30	16	20	58	2C	25	00	C4	8E	21	00	00	9E	8C	0A	D0	8A
40	20	E0	2D	10	10	3E	96	00	C4	8E	21	00	00	18	8C	0A
50	D0	8A	20	E0	2D	10	10	3E	96	00	13	8E	21	00	00	18
60	26	36	80	A0	70	38	1F	40	30	20	25	00	C4	8E	21	00
70	00	1A	00	00	00	00	00	00	00	00	00	00	00	00	00	27

○ HDMI2 EDID (DDC (Display Data Channel) Data

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	00	11	01	03	80	73	41	96	0A	CF	74	A3	57	4C	B0	23
20	09	48	4C	AF	CF	00	31	40	45	40	61	40	81	80	A9	40
30	01	01	01	01	01	01	66	21	50	B0	51	00	1B	30	40	70
40	36	00	C4	8E	21	00	00	1E	02	3A	80	18	71	38	2D	40
50	58	2C	45	00	C4	8E	21	00	00	1E	00	00	00	FD	00	30
60	58	1F	64	11	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	8A

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	18	F1	47	84	05	03	02	20	22	10	23	15	07	50
10	67	03	0C	00	20	00	B8	2D	01	1D	00	72	51	D0	1E	20
20	6E	28	55	00	C4	8E	21	00	00	1E	01	1D	80	18	71	1C
30	16	20	58	2C	25	00	C4	8E	21	00	00	9E	8C	0A	D0	8A
40	20	E0	2D	10	10	3E	96	00	C4	8E	21	00	00	18	8C	0A
50	D0	8A	20	E0	2D	10	10	3E	96	00	13	8E	21	00	00	18
60	26	36	80	A0	70	38	1F	40	30	20	25	00	C4	8E	21	00
70	00	1A	00	00	00	00	00	00	00	00	00	00	00	00	00	17

○ HDMI3 EDID (DDC (Display Data Channel) Data

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	00	11	01	03	80	73	41	96	0A	CF	74	A3	57	4C	B0	23
20	09	48	4C	AF	CF	00	31	40	45	40	61	40	81	80	A9	40
30	01	01	01	01	01	01	66	21	50	B0	51	00	1B	30	40	70
40	36	00	C4	8E	21	00	00	1E	02	3A	80	18	71	38	2D	40
50	58	2C	45	00	C4	8E	21	00	00	1E	00	00	00	FD	00	30
60	58	1F	64	11	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	8A

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	18	F1	47	84	05	03	02	20	22	10	23	15	07	50
10	67	03	0C	00	30	00	98	25	01	1D	00	72	51	D0	1E	20
20	6E	28	55	00	C4	8E	21	00	00	1E	01	1D	80	18	71	1C
30	16	20	58	2C	25	00	C4	8E	21	00	00	9E	8C	0A	D0	8A
40	20	E0	2D	10	10	3E	96	00	C4	8E	21	00	00	18	8C	0A
50	D0	8A	20	E0	2D	10	10	3E	96	00	13	8E	21	00	00	18
60	26	36	80	A0	70	38	1F	40	30	20	25	00	C4	8E	21	00
70	00	1A	00	00	00	00	00	00	00	00	00	00	00	00	00	2F

○ Analog (RGB) EDID table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	00	11	01	03	18	73	41	96	0A	CF	74	A3	57	4C	B0	23
20	09	48	4C	AF	CF	00	31	40	45	40	61	40	81	80	A9	40
30	01	01	01	01	01	01	66	21	50	B0	51	00	1B	30	40	70
40	36	00	C4	8E	21	00	00	1A	02	3A	80	18	71	38	2D	40
50	58	2C	45	00	C4	8E	21	00	00	1E	00	00	00	FD	00	30
60	58	1F	64	11	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	F6

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	04	00	0E	1F	00	80	51	00	1E	30	40	80	37	00
10	C4	8E	21	00	00	1C	F1	27	00	A0	51	00	25	30	50	80
20	37	00	C4	8E	21	00	00	1C	26	36	80	A0	70	38	1F	40
30	30	20	25	00	C4	8E	21	00	00	0A	00	00	00	00	00	00
40	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
50	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
60	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	BC

5. Adjusting the White Balance

5.1 Overview

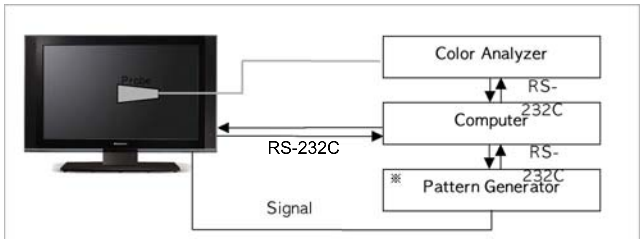
- Purpose and principle for adjusting the white balance
- Purpose : Adjust the white balance to reduce the deviation of the module.
- Principle: The full dynamic range of the module when the RGB gain on the OSD is 192. In order to adjust the white balance with no saturation of the full dynamic range and the data, fix one of the RGB gains to 192 and decrease the remaining two gains to adjust

5.2 Device to use

1) Color Analyzer : CA-210 (NCG: CH 9 / WCG: CH12)
2) Computer to adjust (needed for the automatic adjustment, possible to communicate with the RS-232C)
3) Adjustment remote controller
4) Video Signal Generator MSPG-925F 720p/216Gray (Model:217, Pattern:78)
   => Applied only when the inner pattern cannot be used

*Use the Color Analyzer with the matrix calibrated by the CS-1000

5.3 Measuring instrument wiring diagram



※ Not used when the inner pattern of the TV set is used

5.4 RS-232C Command used for the automatic adjustment

RS-232C COMMAND [CMD	ID	DATA]	Meaning
wb	00	00	White Balance adjustment start.
wb	00	10	Start of adjust gain (Inner white pattern)
wb	00	1f	End of gain adjust
wb	00	20	Start of offset adjust(Inner white pattern)
wb	00	2f	End of offset adjust
wb	00	ff	End of White Balance adjust(Inner pattern disappeared)

- "wb 00 00": Start Auto-adjustment of white balance.
- "wb 00 10": Start Gain Adjustment (Inner pattern)
- "jb 00 c0" :
- …
- "wb 00 1f": End of Adjustment
  * If it needs, offset adjustment (wb 00 20-start, wb 00 2f-end)
- "wb 00 ff": End of white balance adjustment (inner pattern disappear)

6. How to adjust

6.1 How to adjust automatically

1) The adjustment condition should be set by the Power On key.
2) Perform the zero calibration of the Color Analyzer and place the probe close to the display center.
3) Connect the communication cable (RS-232C).
4) Select the desired model of the adjustment program and perform the adjustment.
5) After the adjustment is ended (check the OK sign), check the adjustment condition for each mode of the set. (Warm, Medium, Cool)
6) Disconnect the probe and the communication cable to end the adjustment.

* The adjustment should be started with "wb 00 00" and ended with "wb 00 ff", and the offset should be adjusted when necessary.

6.2 How to adjust manually

1) The adjustment condition should be set by the Power On key.
2) Press the ADJ of the R/C to enter into 'EZ-ADJUST'.
3) Select '10.TEST PATTERN' with the CH +/- key and press the Enter key for 30 minutes or longer to perform the heat run.
4) Perform the zero calibration of the Color Analyzer and fix the sensor with the 10cm or less distance at the center of the LCD module surface when adjusting.
5) Press the ADJ of the R/C to select '7.White-Balance' of the Ez-Adjust and press the right arrow key(G) to enter into the adjustment mode.
   (As soon as you press 'G ', the screen is entered into the full white inner pattern.)
6) Fix one of the R/G/B gains to 192 and decrease the remaining two gains to adjust not to exceed 192.
7) The adjustment is done at three white balances of Cool, Medium and Warm.

* The inner pattern is basically used, and if it is not possible, the adjustment can be done by selecting the HDMI input. NONE, INNER or HDMI can be selected by the bottom option at the Ez Adjust Menu 7.White Balance menu and it is set to INNER as default. If the adjustment cannot be done by the inner pattern, select the HDMI to adjust.

* Adjustment environment and reference
  1) Environment illuminance
     Adjust it to 10 LUX or less at the place where the light source such as lamp should be blocked at maximum.
  2) Probe location
     - PDP: Locate the Color Analyzer (CA-100, CA-100+, CA210) close to the module surface to measure and adjust
     - LCD: Maintain the Color Analyzer (CA-210) close to the module surface by 10cm or less and keep the probe of the Color Analyzer perpendicular to the module surface (80°~ 100°).
  3) Aging time
     - Keep the power on after the aging start (with no power off) to perform the heat run for 15 minutes or longer.
     - Keep the white pattern with the inner pattern for the PDP.
     - For the LCD, make sure that the back light is turned on by using no signal and the full white pattern or others.

6.3 Reference
(White Balance adjustment coordinate and White balance)

- Brightness: Full white 216 Gray

- Standard color coordinate and white balance when using the CS-1000

Color temperature	Color Coordination		Temp	△UV
	x	y		
COOL	0.276	0.283	11000K	0.0000
MEDIUM	0.285	0.293	9300K	0.0000
WARM	0.313	0.324	6500K	0.0000

- Standard color coordinate and white balance when using the CA-210 (CH 10)

Color temperature	Test Equipment	Color Coordination	
		x	y
COOL	CA-210	0.276±0.002	0.283±0.002
MEDIUM	CA-210	0.285±0.002	0.293±0.002
WARM	CA-210	0.313±0.002	0.329±0.002

7. Select the option by country

7.1 Overview
- The option selection is applied to the North American model only, which selects the rating related country.
- Applied models: LA84A Chassis applied None USA Model(Canada, Mexico)

7.2 How to select
1) Press the In-Start key of the R/C and press the red oval OP1(PIP CH-) key to enter into the Factory Option menu.
2) Select 1.USA, 2.CANADA or 3.MEXICO from the country select according to the destination. At this time, use the volume +/- key to adjust

8. Set the shipping mode (In-stop)
- After completing the final test, in order to set the set to the shipping condition, press the In-Stop key of the R/C to make sure that the set is turned off.

9. GND and resisting pressure test

9.1 How to test
1) Preparing for the automatic test on the GND & resisting pressure
   - Make sure that the power cord is completely inserted into the set. (When it is disconnected or loosened, test after inserting it)
2) Perform the automatic test on the GND & resisting pressure
   - The set with power cord, the cord and the A/V completely inserted into the tuner is loaded on the pallet and entered into the automatic test process.
   - Connect the D-terminal AV JACK tester
   - Turn on the automatic (GWS103-4)
   - Perform the GND TEST
   - If it is not good, the buzzer is operated to notify the test result to the operator.
   - If it is OK, it is automatically switched to the resisting pressure test. (Disconnect the cord and the A/V from the AV JACK BOX)
   - Perform the resisting pressure test
   - If it is not good, the buzzer is operated to notify the test result to the operator.
   - If it is OK, the GOOD LAMP is turned and the stopper is moves down, and it moves to the next process.

9.2 Items to manage
- TEST voltage
  - GND:1.5KV/min at 100mA
  - SIGNAL:3KV/min at 100mA
- TEST time:1 second
- TEST POINT
  - GND TEST = between POWER CORD GND and SIGNAL CABLE METAL GND
  - Resisting pressure TEST = between POWER CORD GND and LIVE & NEUTRAL
- LEAKAGE CURRENT: Set to 0.5mArms

10. ISP Download (option)

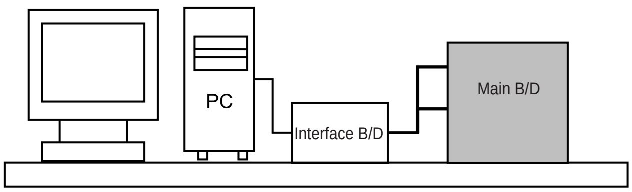
10.1 Overview

The Micom upgrade via the external port for the service for the customer.

10.2 Device to use

1) PC
2) B/D for the interface (IIC & ISP)
3) Jig for downloading (for the power supply)

10.3 Adjustment wiring diagram (Download device configuration diagram)



10.4 Adjustment condition (Download condition)

- IC name & Circuit number: MYSON MTV416GMF & IC4015
- Power supply: 5V (P4004 Pin 3)
- SCL: D-sub Pin 10
- SDA: D-sub Pin 7

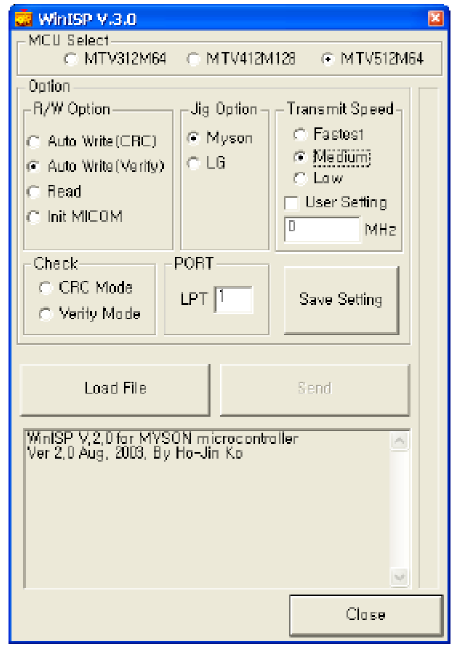
10.5 How to adjust (for downloading)

1) fter executing LGE Monitor Tools v1.1, click the first icon. (See the figure)

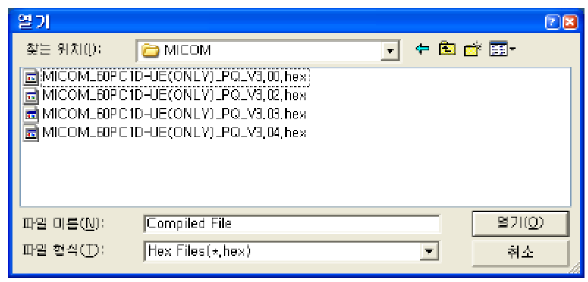


2) When the screen is displayed as shown at the below figure, set the items as follows:
   - MCU Select: MTV512M64
   - R/W Option: Auto Write(Verify)
   - Jig Option: Myson
   - Transmit Speed: Medium
   - Check: blank
   - PORT: Select the Parallel Port to use (LPT1 in general)

*caution: Select the EPP as LPT from the ROM BIAS setting.



3) Click the Load File Button, and select the desired Hex File to download.
(If no file is displayed, make sure that the file format is selected as Hex file (*.hex))



4) Click 'Send Button'

11. USB S/W Download (option)

11.1 Overview

The USB download is for the quick service response via the S/W upgrade and for applying the S/W upgrade necessary for the board adjustment

11.2 How to dowunload

1) After turning on the set, make sure that the display screen is turned on.
2) When the USB Memory Stick with the upgrade file applied is inserted into the USB jack on the main board, the following screen (example) is displayed after several seconds

TV Software Upgrade

[Current TV Software Version Information]
HOMEFS(RELEASE): 00.01.01
[New Found TV Software Version Information]
MODEL : 42PX3D-UE
FILE : homefs-42PX3D-UE-RELEASE-0x0102.pak
HOMEFS(RELEASE) : 00.01.02
Press ENTER to start downloading the new software.
Until the whole process if completed, please
- Do not remove the memory card from the slot.
- Do not plug off.
Press EXIT to cancel the upgrade.

3) Check the current version at [Current TV Software Version Information], check the S/W version to upgrade at [New Found TV Software Version Information], and press the Enter button of the TV remote controller.
4) Downloading is proceeded as shown at the below screen, and when it is ended, turning on/off is automatically done.
(When the automatic proceeding is not smoothly done, manually perform the power On/Off).

TV Software Upgrade

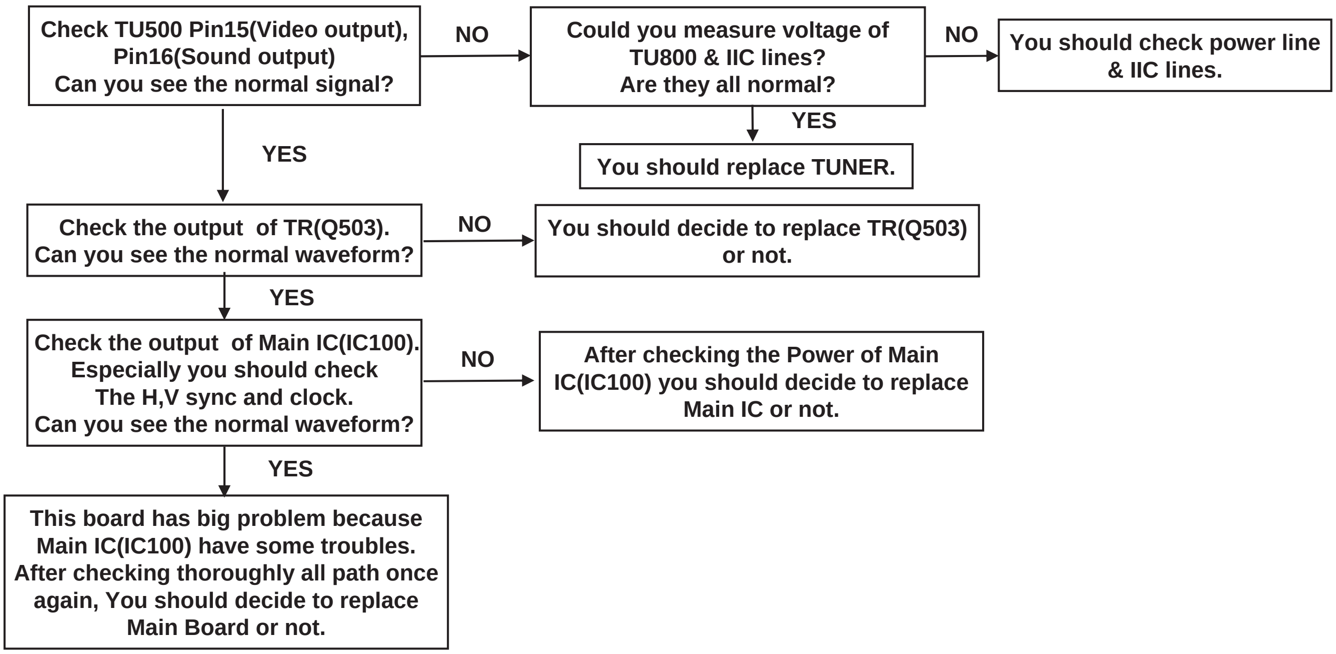
The software upgrade is now in progress.
Until the whole process if completed, please
- Do not remove the memory card from the slot.
- Do not plug off.
Reading the file°¶Done
Upgrading°¶Done

The TV will restart automatically in 0 seconds.

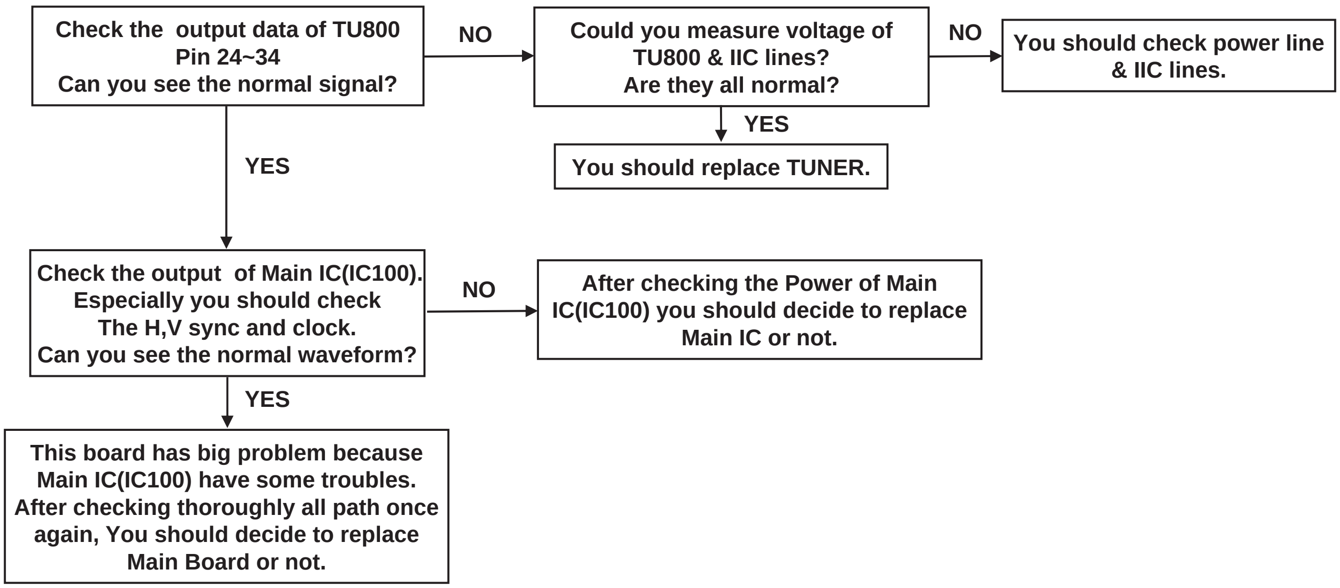
5) When downloading is ended, remove the USB Memory Stick from the USB jack.
6) Press the IN-START button of the remote controller to check the upgraded S/W version.

TROUBLESHOOTING

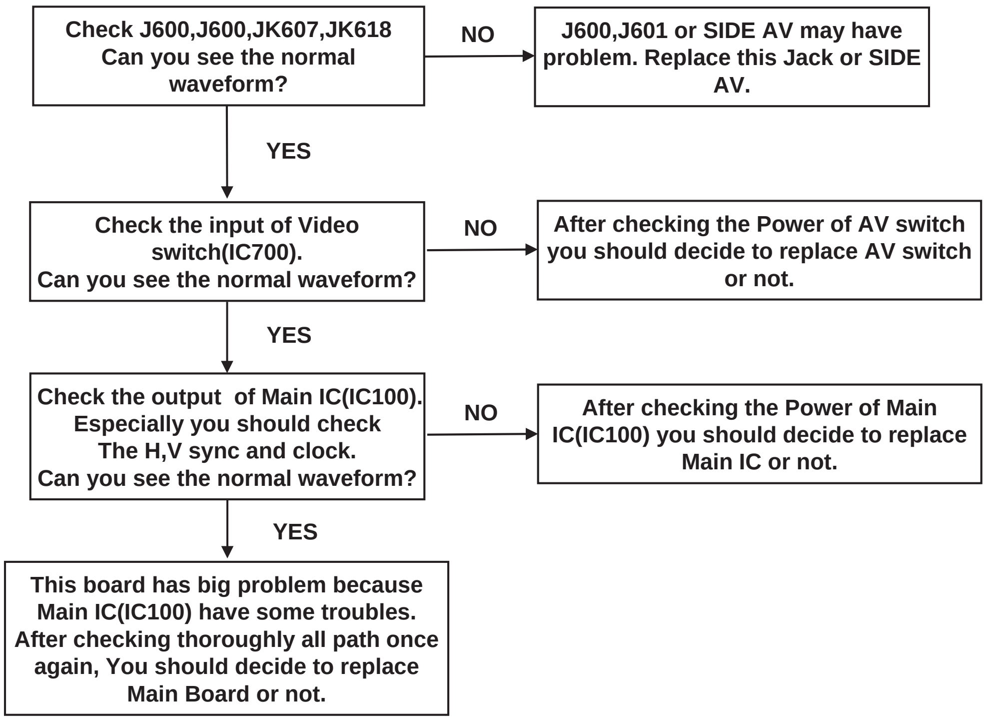
TV/CATV doesn t display



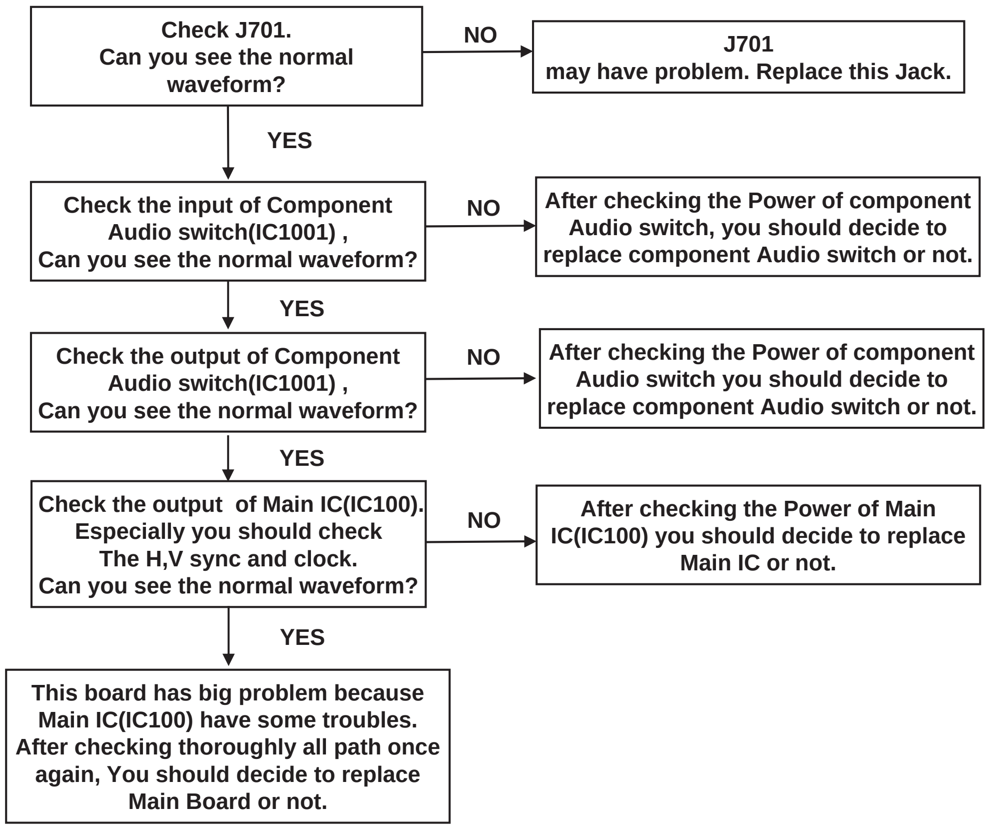
DTV doesn t display



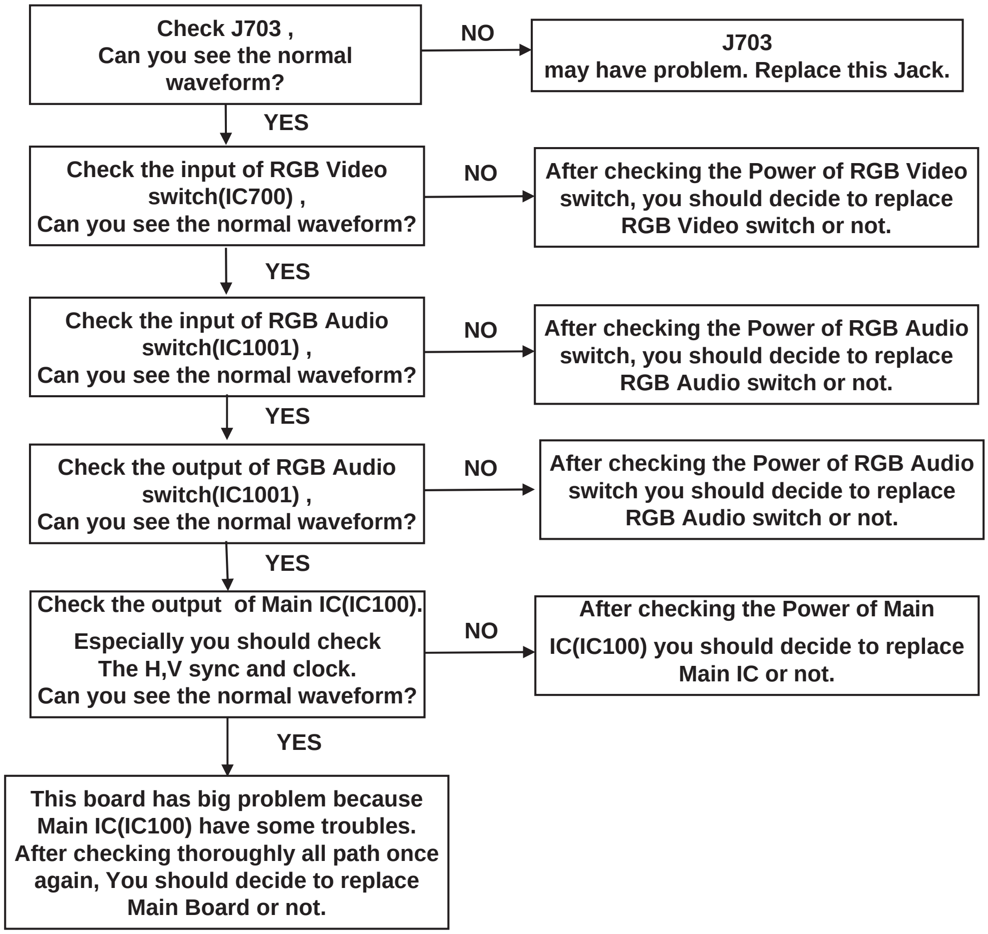
AV1 / 2 / 3 doesn t display



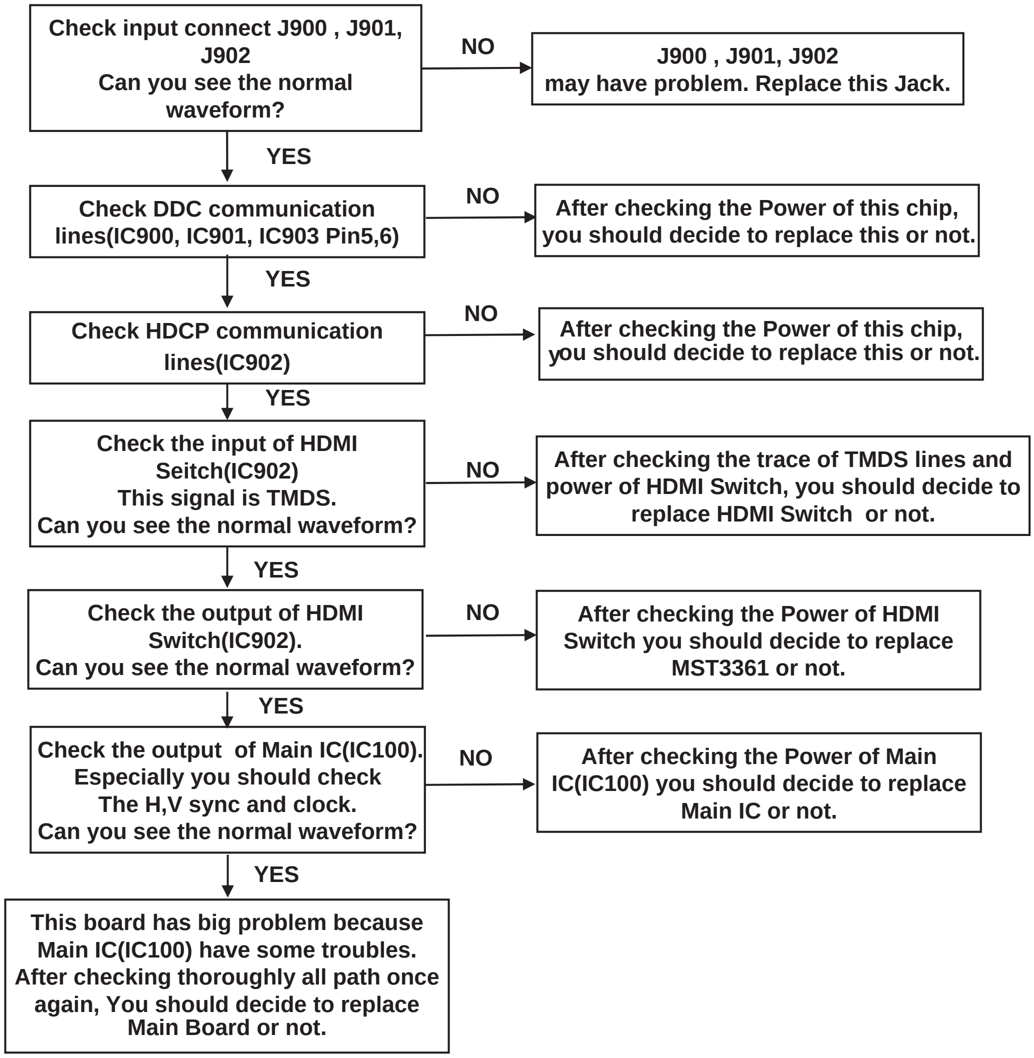
Component doesn t display



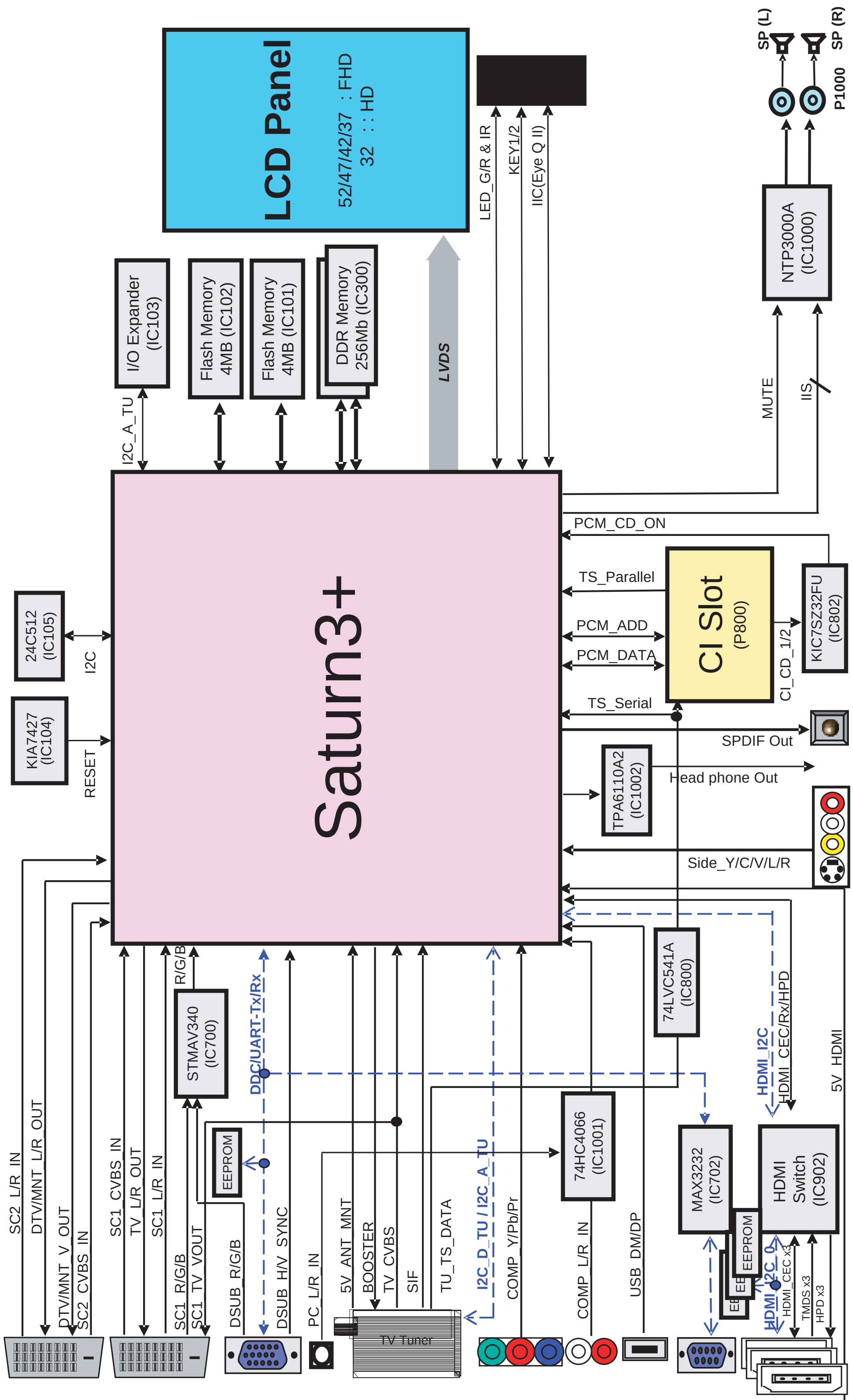
RGB PC doesn t display



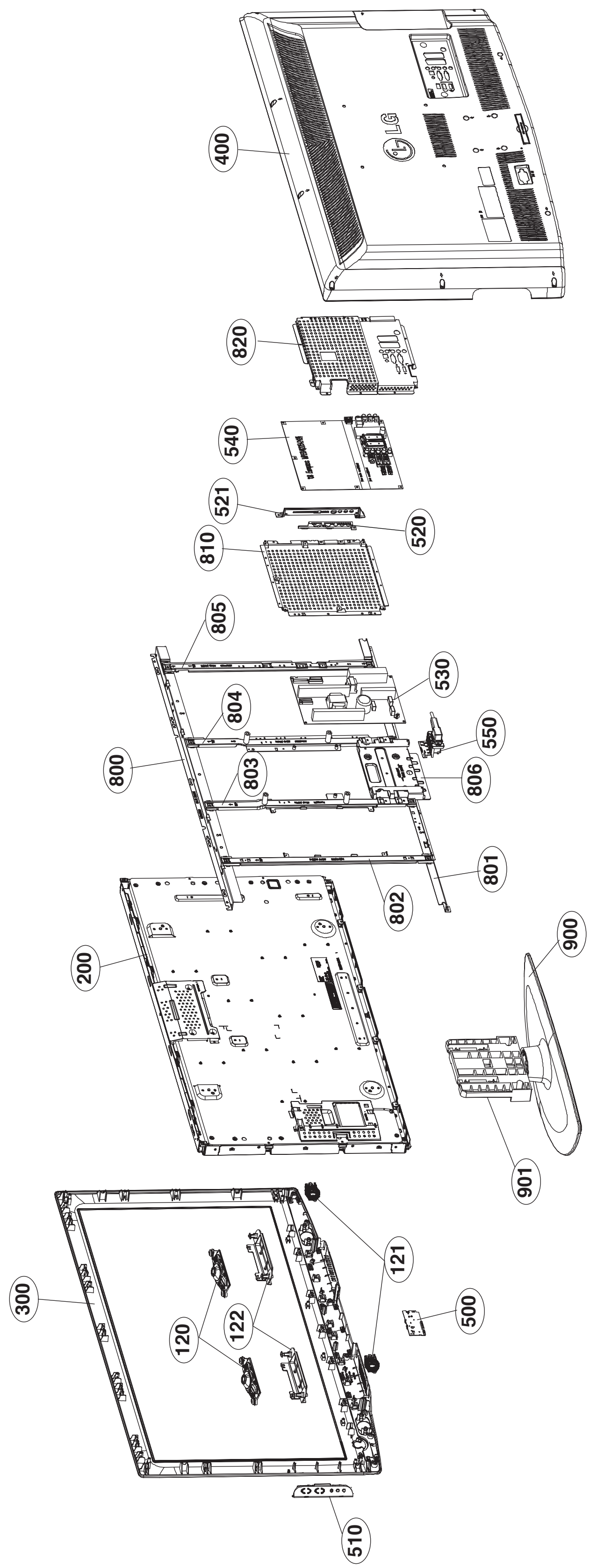
HDMI doesn t display

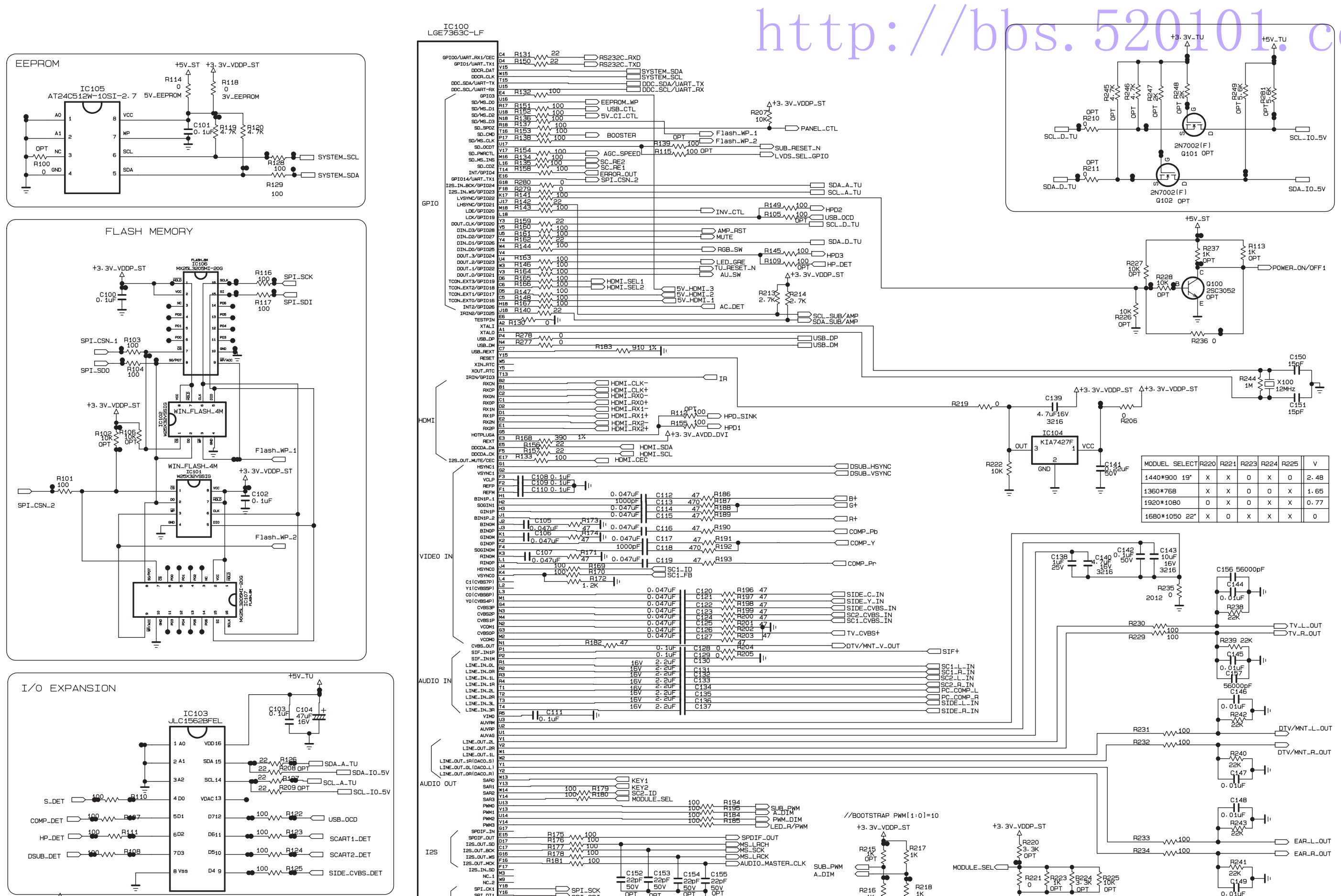


BLOCK DIAGRAM



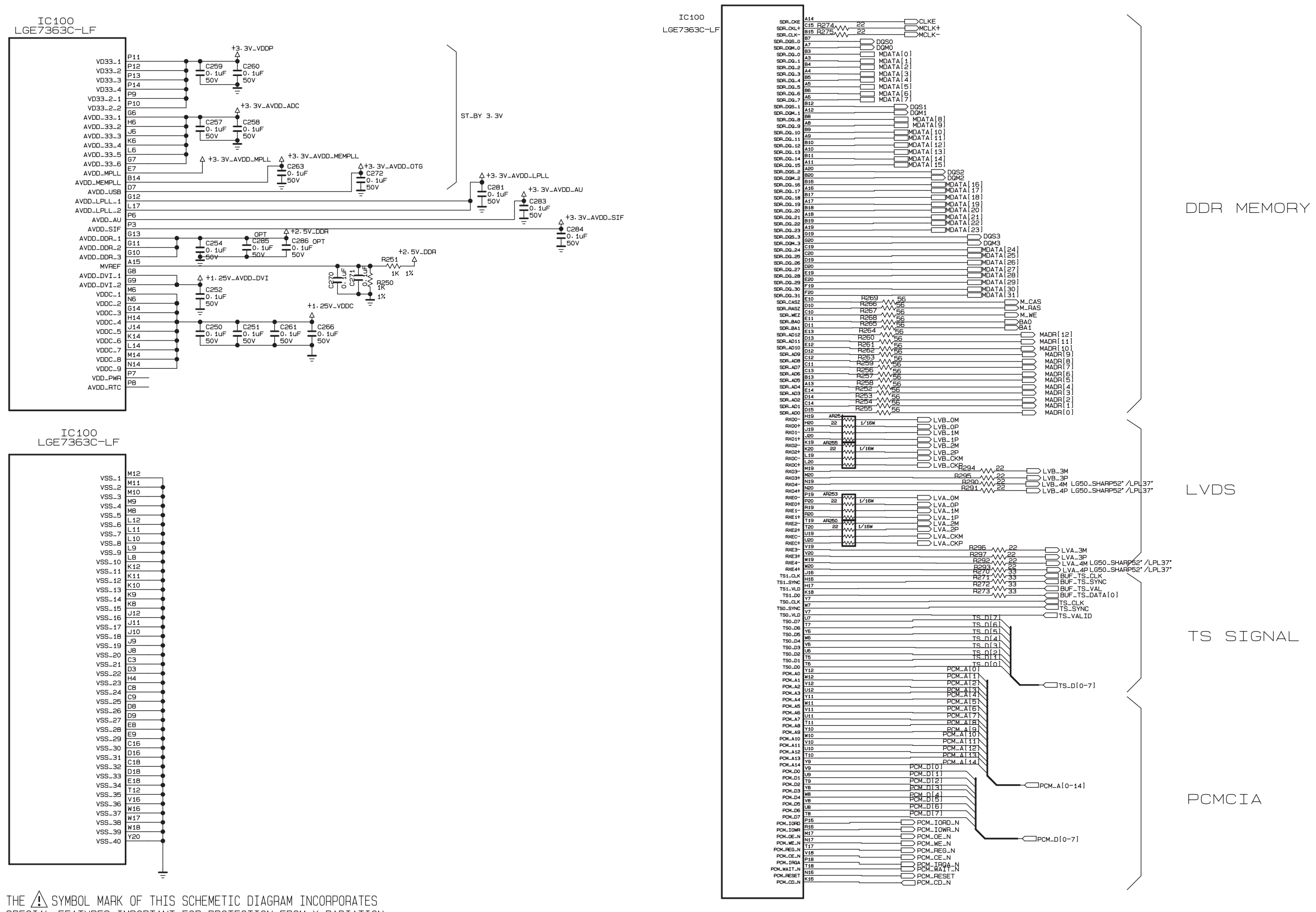
EXPLODED VIEW





MODUEL SELECT	R220	R221	R223	R224	R225	V
1440*900 19"	X	X	O	X	O	2.48
1360*768	X	X	O	O	X	1.65
1920*1080	O	X	O	X	X	0.77
1680*1050 22"	X	O	X	X	X	0

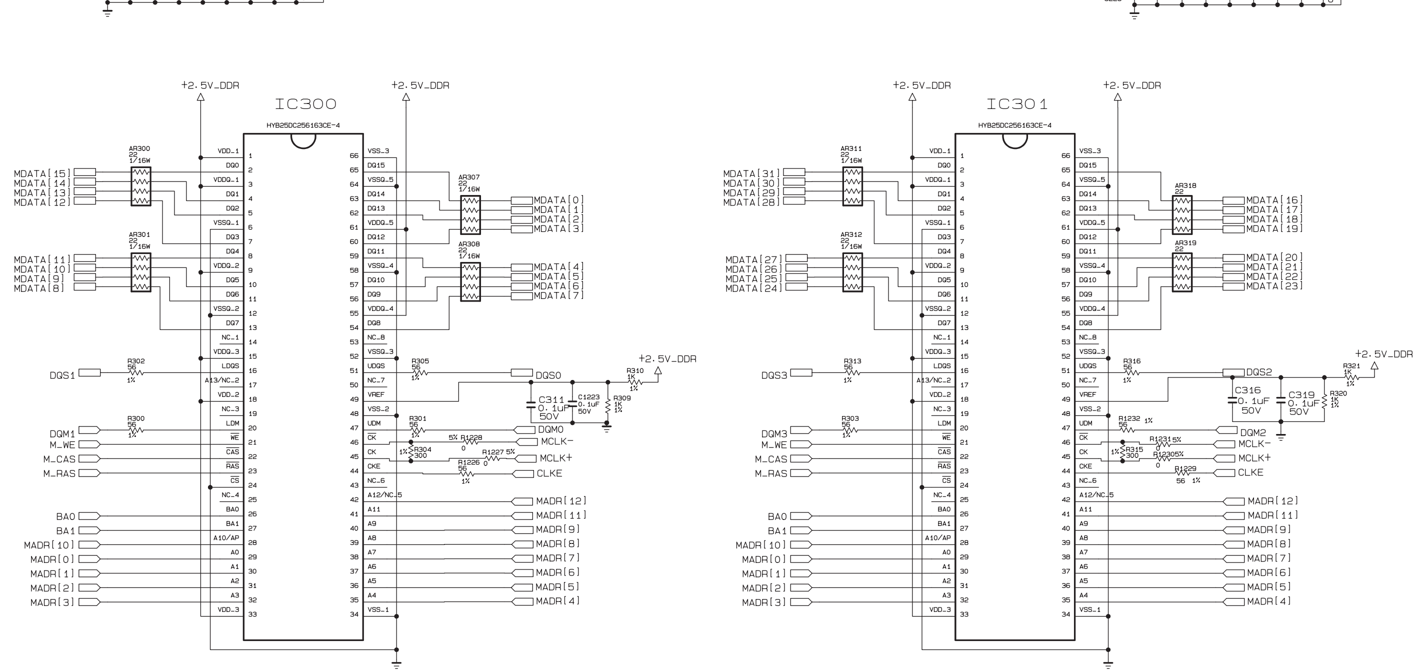
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.



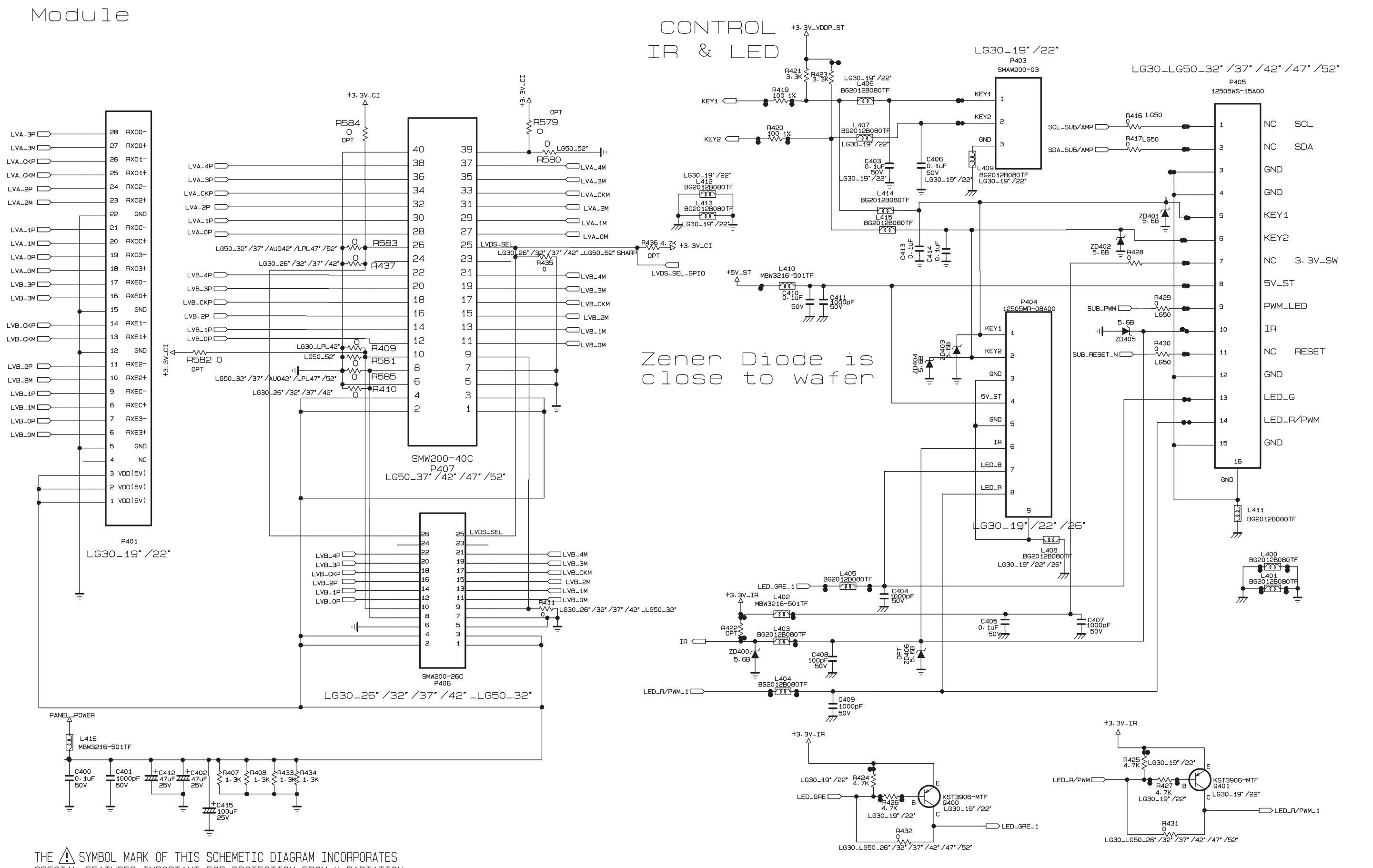
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1 mil = 0.0254 mm
20 mil = 0.508 mm
40 mil = 1.016 mm

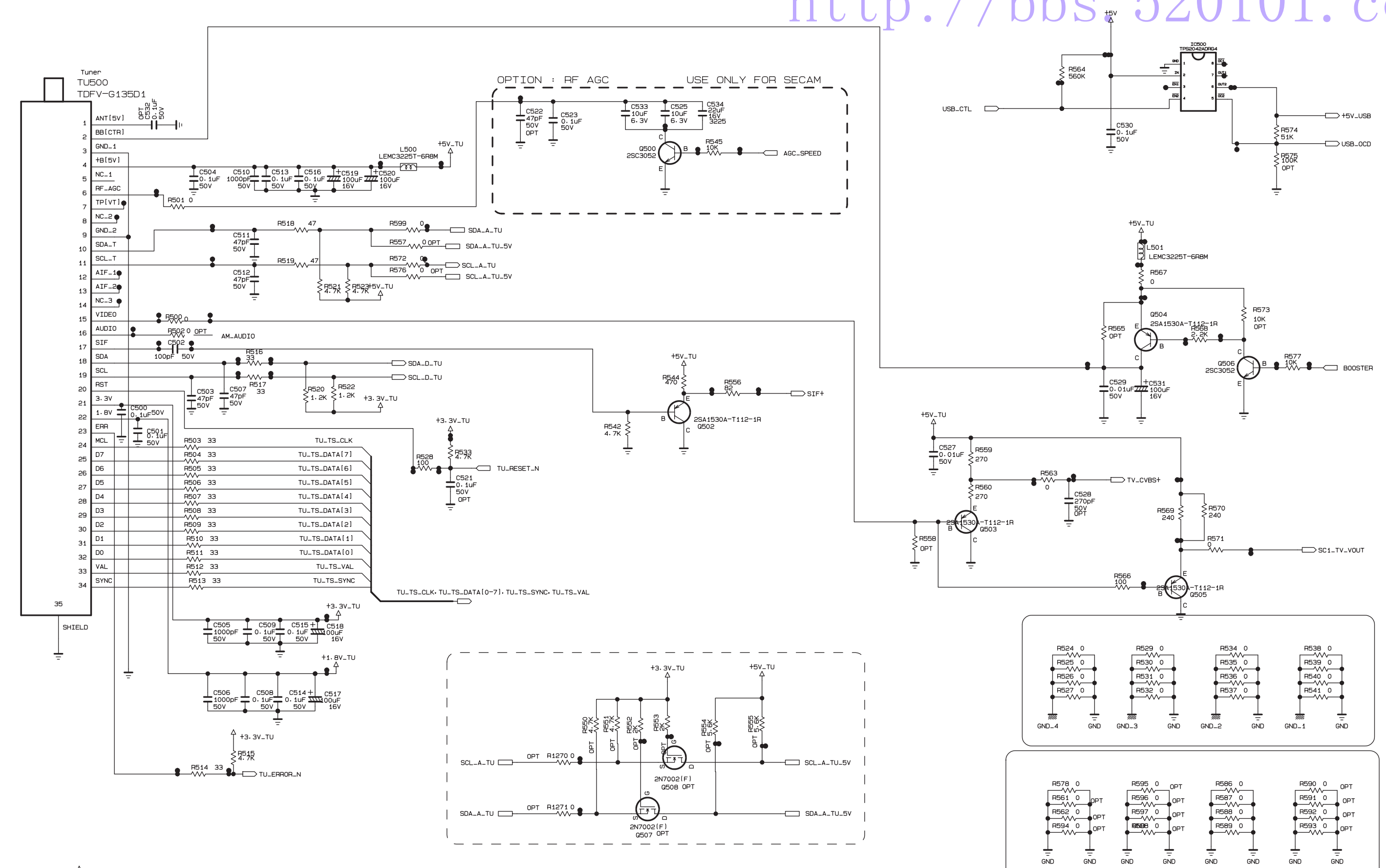
ADDRESS TOTAL LENGTH < 3000 mil (76.2mm)
DDR1 & DDR2 different length range = +/- 25 mil (max +/- 50 mil)



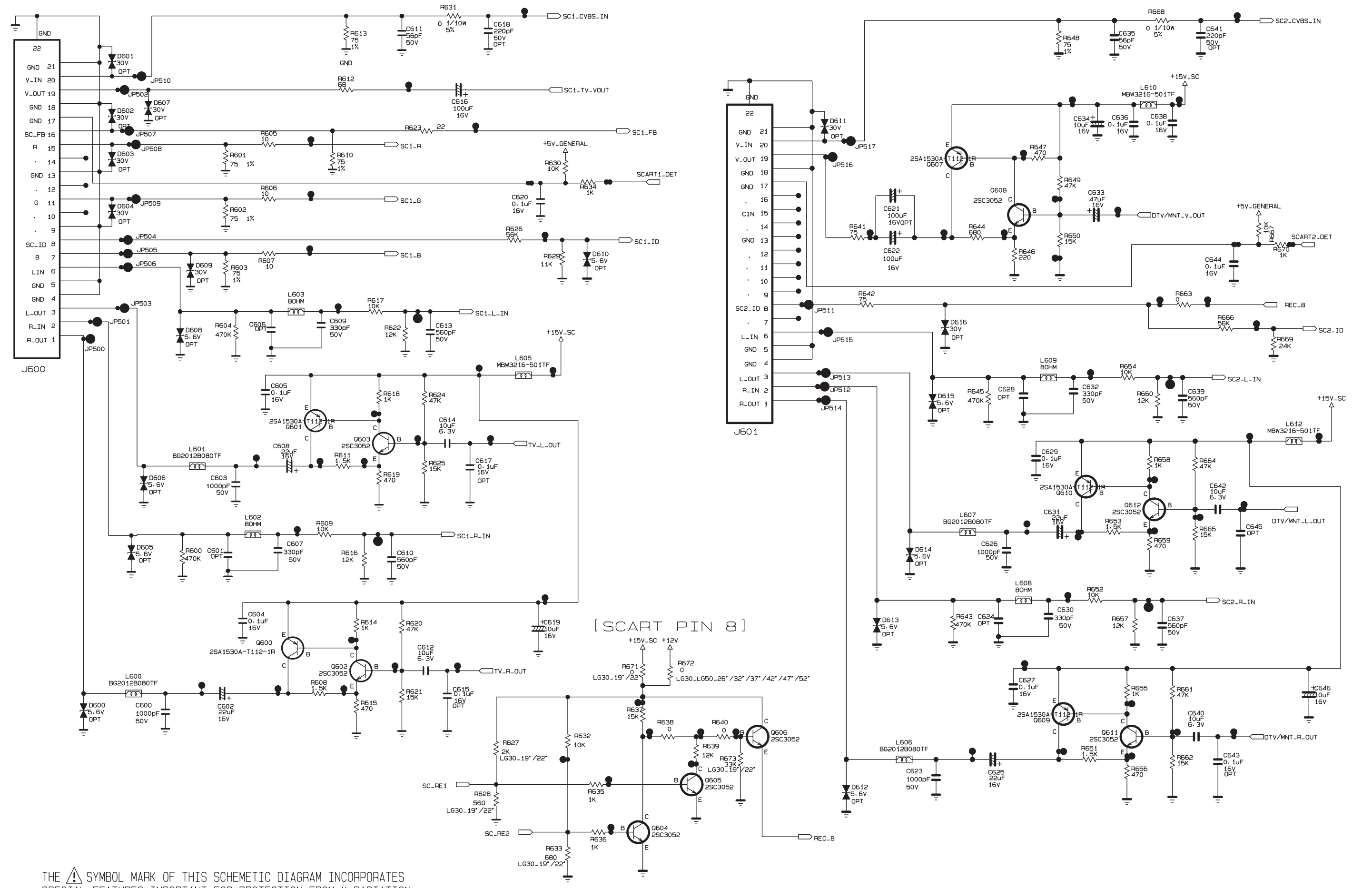
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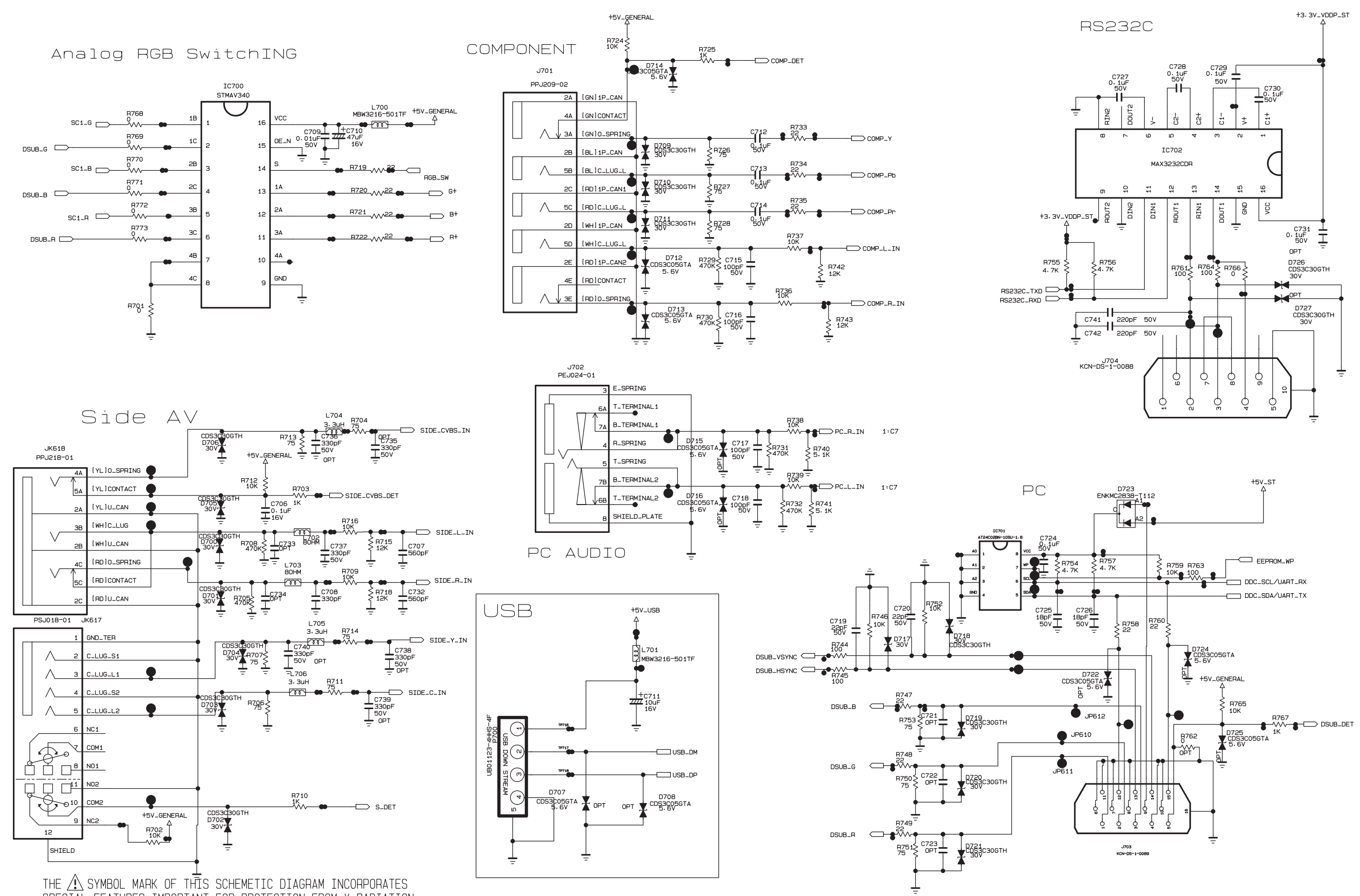
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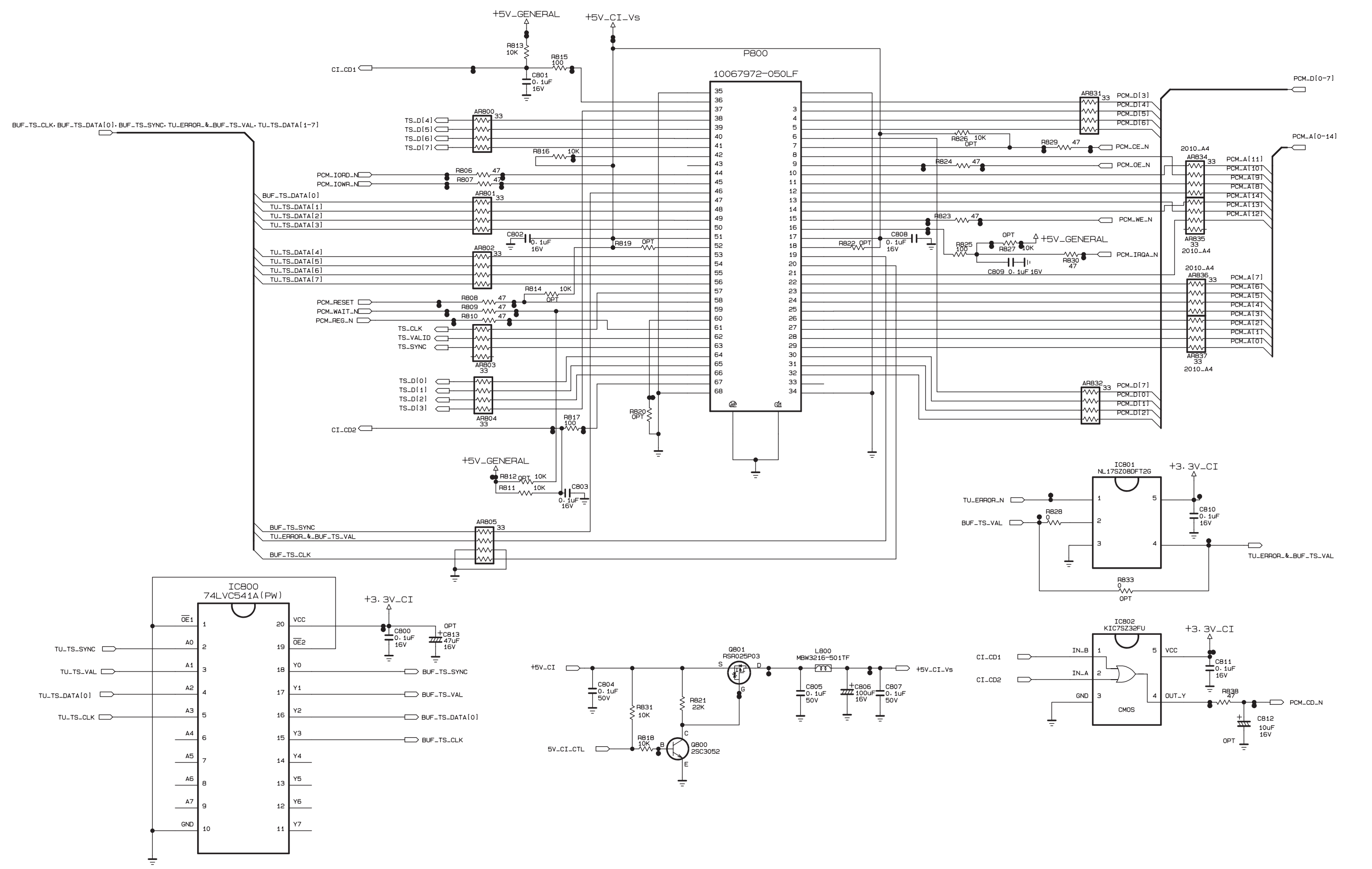
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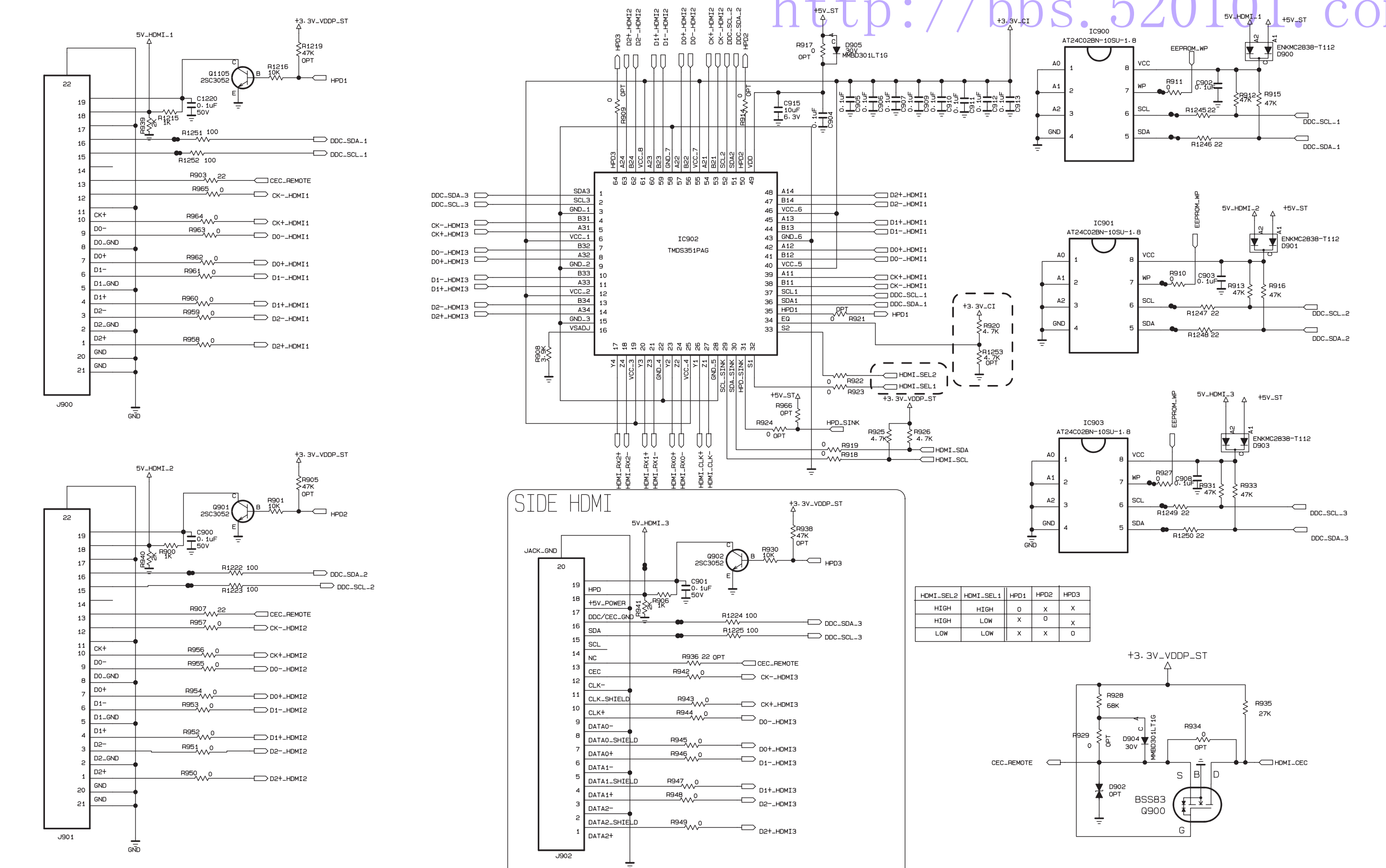
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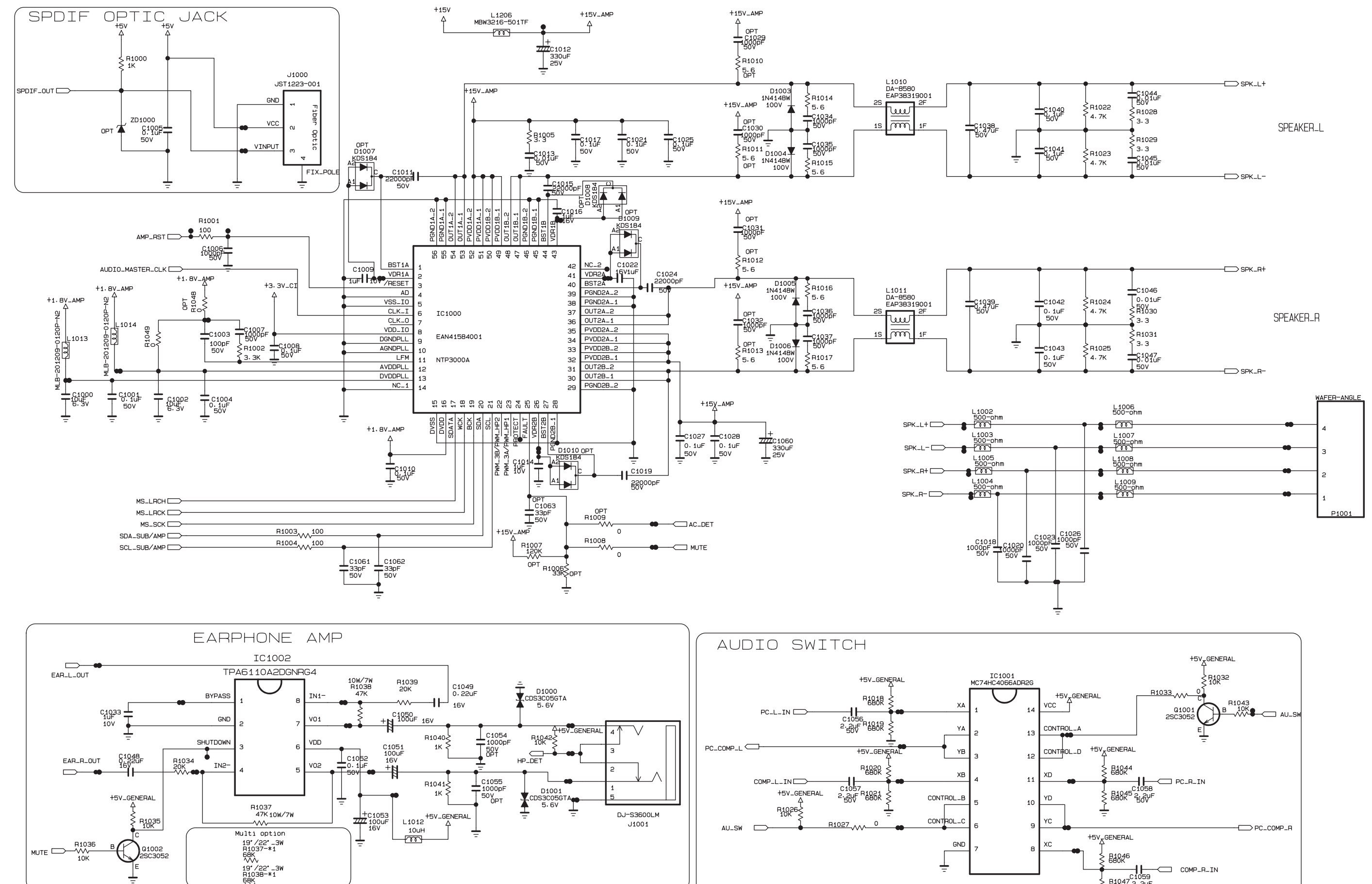
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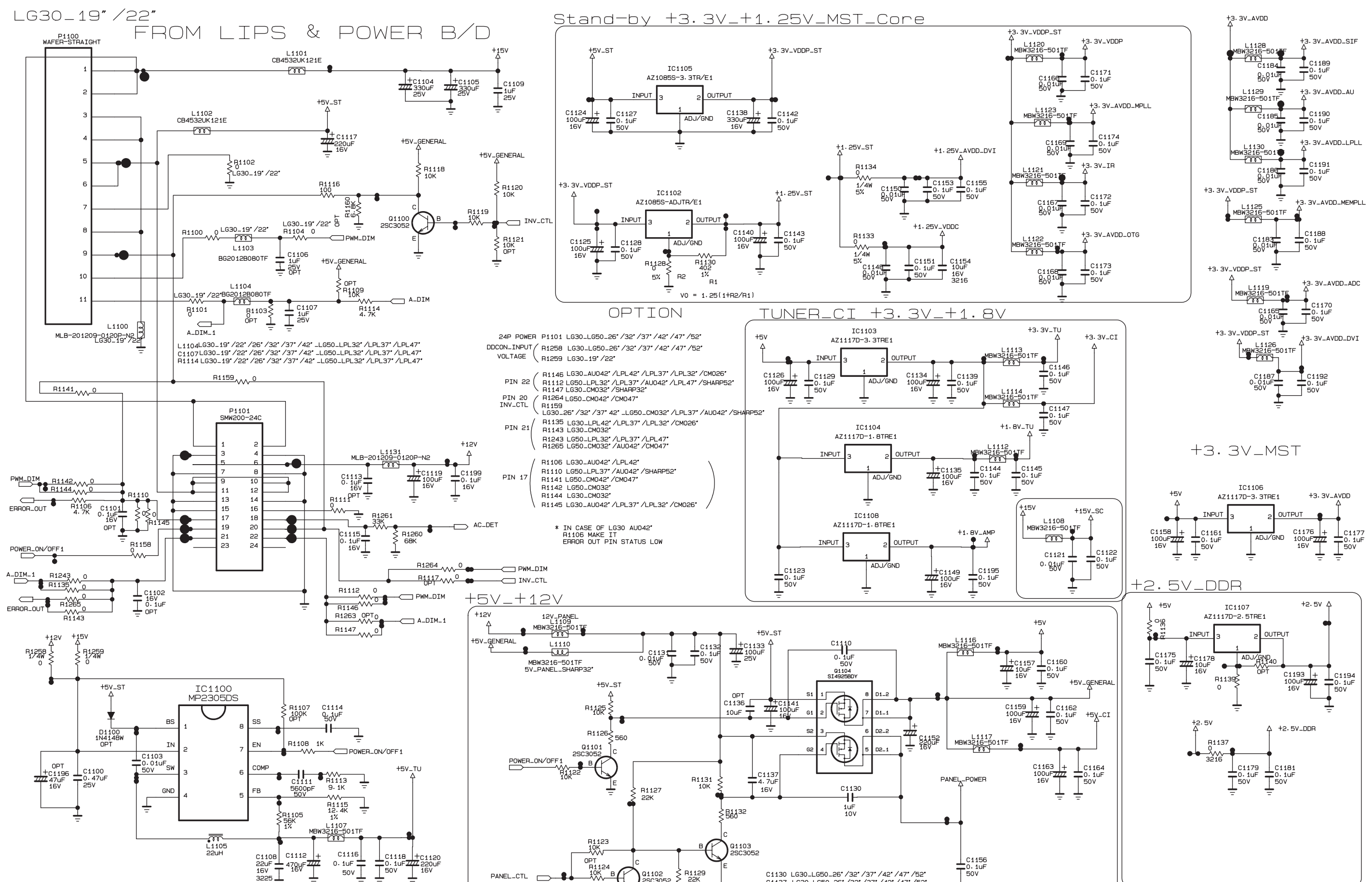
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